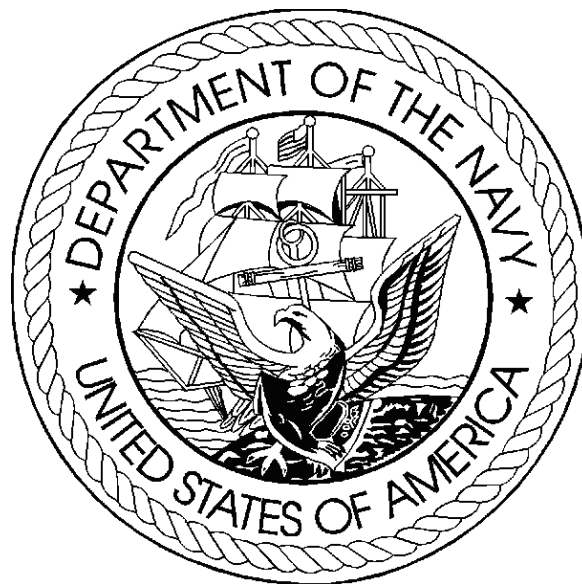


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**Department of Defense
Fiscal Year (FY) 2017 President's Budget Submission**

February 2016



Navy

Justification Book Volume 5 of 5

Research, Development, Test & Evaluation, Navy

Budget Activity 7

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The estimated cost for this report for the Department of the Navy (DON) is \$36,084.

The estimated total cost for supporting the DON budget justification material is approximately \$1,834,000 for the 2016 fiscal year. This includes \$75,200 in supplies and \$1,758,800 in labor.

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Navy • President's Budget Submission FY 2017 • RDT&E Program

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Department of Defense Appropriations Act, 2017

Research, Development, Test and Evaluation, Navy

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, \$17,354,624,000, to remain available for obligation until September 30, 2017.

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Department of Defense
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 Exhibit R-1 FY 2017 President's Budget
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 (Dollars in Thousands)

14 Jan 2016

Appropriation	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Research, Development, Test & Eval, Navy	16,067,423	18,111,247	35,747	18,146,994	17,276,301	78,323	17,354,624
Total Research, Development, Test & Evaluation	16,067,423	18,111,247	35,747	18,146,994	17,276,301	78,323	17,354,624

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Department of Defense
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Summary Recap of Budget Activities -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Basic Research	634,410	671,875		671,875	542,970		542,970
Applied Research	855,861	965,872		965,872	861,151		861,151
Advanced Technology Development	625,631	696,226		696,226	736,988		736,988
Advanced Component Development & Prototypes	4,357,168	5,022,272		5,022,272	4,662,867	41,897	4,704,764
System Development & Demonstration	5,119,875	6,274,796		6,274,796	6,025,655		6,025,655
Management Support	1,278,299	918,223		918,223	853,736		853,736
Operational Systems Development	3,196,179	3,561,983	35,747	3,597,730	3,592,934	36,426	3,629,360
Total Research, Development, Test & Evaluation	16,067,423	18,111,247	35,747	18,146,994	17,276,301	78,323	17,354,624
 Summary Recap of FYDP Programs -----							
Strategic Forces	140,959	164,143		164,143	196,948		196,948
General Purpose Forces	1,292,908	1,326,178		1,326,178	1,447,043		1,447,043
Intelligence and Communications	754,576	719,253		719,253	713,042		713,042
Research and Development	12,620,194	14,380,627		14,380,627	13,638,282	41,897	13,680,179
Central Supply and Maintenance	60,896	28,506		28,506	52,526		52,526
Administration and Associated Activities	137	355		355			
Classified Programs	1,197,753	1,492,185	35,747	1,527,932	1,228,460	36,426	1,264,886
Total Research, Development, Test & Evaluation	16,067,423	18,111,247	35,747	18,146,994	17,276,301	78,323	17,354,624

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se
1	0601103N	University Research Initiatives	01	129,331	146,196		146,196	101,714		101,714	U
2	0601152N	In-House Laboratory Independent Research	01	18,997	19,126		19,126	18,508		18,508	U
3	0601153N	Defense Research Sciences	01	486,082	506,553		506,553	422,748		422,748	U
		Basic Research		634,410	671,875		671,875	542,970		542,970	
4	0602114N	Power Projection Applied Research	02	94,944	87,223		87,223	41,371		41,371	U
5	0602123N	Force Protection Applied Research	02	159,556	178,616		178,616	158,745		158,745	U
6	0602131M	Marine Corps Landing Force Technology	02	44,629	51,643		51,643	51,590		51,590	U
7	0602235N	Common Picture Applied Research	02	44,874	42,538		42,538	41,185		41,185	U
8	0602236N	Warfighter Sustainment Applied Research	02	46,202	45,047		45,047	45,467		45,467	U
9	0602271N	Electromagnetic Systems Applied Research	02	102,750	114,644		114,644	118,941		118,941	U
10	0602435N	Ocean Warfighting Environment Applied Research	02	62,643	72,252		72,252	42,618		42,618	U
11	0602651M	Joint Non-Lethal Weapons Applied Research	02	5,728	6,114		6,114	6,327		6,327	U
12	0602747N	Undersea Warfare Applied Research	02	88,204	150,839		150,839	126,313		126,313	U
13	0602750N	Future Naval Capabilities Applied Research	02	171,992	179,538		179,538	165,103		165,103	U
14	0602782N	Mine and Expeditionary Warfare Applied Research	02	34,339	37,418		37,418	33,916		33,916	U
15	0602898N	Science and Technology Management - ONR Headquarters	02					29,575		29,575	U
		Applied Research		855,861	965,872		965,872	861,151		861,151	

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se
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16	0603114N	Power Projection Advanced Technology	03	36,651	36,971		36,971	96,406		96,406	U
17	0603123N	Force Protection Advanced Technology	03	25,148	38,044		38,044	48,438		48,438	U
18	0603271N	Electromagnetic Systems Advanced Technology	03	62,860	34,856		34,856	26,421		26,421	U
19	0603640M	USMC Advanced Technology Demonstration (ATD)	03	125,696	131,490		131,490	140,416		140,416	U
20	0603651M	Joint Non-Lethal Weapons Technology Development	03	11,163	12,745		12,745	13,117		13,117	U
21	0603673N	Future Naval Capabilities Advanced Technology Development	03	257,806	265,562		265,562	249,092		249,092	U
22	0603680N	Manufacturing Technology Program	03		57,074		57,074	56,712		56,712	U
23	0603729N	Warfighter Protection Advanced Technology	03	39,374	36,299		36,299	4,789		4,789	U
24	0603747N	Undersea Warfare Advanced Technology	03	9,639	13,748		13,748	25,880		25,880	U
25	0603758N	Navy Warfighting Experiments and Demonstrations	03	55,363	65,946		65,946	60,550		60,550	U
26	0603782N	Mine and Expeditionary Warfare Advanced Technology	03	1,931	3,491		3,491	15,167		15,167	U
		Advanced Technology Development		625,631	696,226		696,226	736,988		736,988	
27	0603207N	Air/Ocean Tactical Applications	04	39,669	37,832		37,832	48,536		48,536	U
28	0603216N	Aviation Survivability	04	4,280	10,904		10,904	5,239		5,239	U
29	0603237N	Deployable Joint Command and Control	04	2,991	3,086		3,086				U
30	0603251N	Aircraft Systems	04	14,270	26,643		26,643	1,519		1,519	U
31	0603254N	ASW Systems Development	04	7,602	5,551		5,551	7,041		7,041	U

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32	0603261N	Tactical Airborne Reconnaissance	04	5,870	3,080		3,080	3,274		3,274	U
33	0603382N	Advanced Combat Systems Technology	04	1,582	1,631		1,631	57,034		57,034	U
34	0603502N	Surface and Shallow Water Mine Countermeasures	04	83,793	90,472		90,472	165,775		165,775	U
35	0603506N	Surface Ship Torpedo Defense	04	56,802	71,300		71,300	87,066		87,066	U
36	0603512N	Carrier Systems Development	04	5,954	8,348		8,348	7,605		7,605	U
37	0603525N	PILOT FISH	04	140,841	122,939		122,939	132,068		132,068	U
38	0603527N	RETRACT LARCH	04	29,725	28,803		28,803	14,546	3,907	18,453	U
39	0603536N	RETRACT JUNIPER	04	79,059	112,604		112,604	115,435		115,435	U
40	0603542N	Radiological Control	04	667	710		710	702		702	U
41	0603553N	Surface ASW	04	1,020	1,096		1,096	1,081		1,081	U
42	0603561N	Advanced Submarine System Development	04	65,913	85,834		85,834	100,565		100,565	U
43	0603562N	Submarine Tactical Warfare Systems	04	7,986	10,371		10,371	8,782		8,782	U
44	0603563N	Ship Concept Advanced Design	04	17,831	10,459		10,459	14,590		14,590	U
45	0603564N	Ship Preliminary Design & Feasibility Studies	04	8,007	3,332		3,332	15,805		15,805	U
46	0603570N	Advanced Nuclear Power Systems	04	499,961	482,040		482,040	453,313		453,313	U
47	0603573N	Advanced Surface Machinery Systems	04	20,357	24,143		24,143	36,655		36,655	U
48	0603576N	CHALK EAGLE	04	529,885	511,651		511,651	367,016		367,016	U
49	0603581N	Littoral Combat Ship (LCS)	04	80,199	91,416		91,416	51,630		51,630	U
50	0603582N	Combat System Integration	04	20,741	32,561		32,561	23,530		23,530	U
51	0603595N	Ohio Replacement	04	833,274	971,393		971,393	700,811		700,811	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se c
52	0603596N	LCS Mission Modules	04	172,602	203,143		203,143	160,058		160,058	U
53	0603597N	Automated Test and Analysis	04	7,816	23,000		23,000				U
54	0603599N	Frigate Development	04		30,000		30,000	84,900		84,900	U
55	0603609N	Conventional Munitions	04	7,603	7,678		7,678	8,342		8,342	U
56	0603611M	Marine Corps Assault Vehicles	04	101,175	212,173		212,173	158,682		158,682	U
57	0603635M	Marine Corps Ground Combat/Support System	04	1,241	378		378	1,303		1,303	U
58	0603654N	Joint Service Explosive Ordnance Development	04	22,274	15,329		15,329	46,911		46,911	U
59	0603658N	Cooperative Engagement	04	41,158	73,786		73,786				U
60	0603713N	Ocean Engineering Technology Development	04	6,127	4,520		4,520	4,556		4,556	U
61	0603721N	Environmental Protection	04	13,200	19,289		19,289	20,343		20,343	U
62	0603724N	Navy Energy Program	04	62,412	56,391		56,391	52,479		52,479	U
63	0603725N	Facilities Improvement	04	2,588	3,726		3,726	5,458		5,458	U
64	0603734N	CHALK CORAL	04	162,900	174,771		174,771	245,860		245,860	U
65	0603739N	Navy Logistic Productivity	04	3,355	3,866		3,866	3,089		3,089	U
66	0603746N	RETRACT MAPLE	04	346,830	359,856		359,856	323,526		323,526	U
67	0603748N	LINK PLUMERIA	04	260,179	237,376		237,376	318,497		318,497	U
68	0603751N	RETRACT ELM	04	32,889	37,700		37,700	52,834		52,834	U
69	0603764N	LINK EVERGREEN	04	44,894	47,312		47,312	48,116		48,116	U
70	0603787N	Special Processes	04	24,336	17,392		17,392	13,619		13,619	U
71	0603790N	NATO Research and Development	04	8,659	8,320		8,320	9,867		9,867	U

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Program Line Element No Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
72 0603795N	Land Attack Technology	04	310	887		887	6,015		6,015	U
73 0603851M	Joint Non-Lethal Weapons Testing	04	32,955	29,444		29,444	27,904		27,904	U
74 0603860N	Joint Precision Approach and Landing Systems - Dem/Val	04	41,644	81,466		81,466	104,144		104,144	U
75 0603925N	Directed Energy and Electric Weapon Systems	04	54,154	41,730		41,730	32,700		32,700	U
76 0604112N	Gerald R. Ford Class Nuclear Aircraft Carrier (CVN 78 - 80)	04	46,308	98,105		98,105	70,528		70,528	U
77 0604122N	Remote Minehunting System (RMS)	04	20,534	17,589		17,589	3,001		3,001	U
78 0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	5,677	18,969		18,969	34,920	37,990	72,910	U
79 0604279N	ASE Self-Protection Optimization	04	5,121	7,874		7,874				U
80 0604292N	MH-XX	04	3,007	4,516		4,516	1,620		1,620	U
81 0604454N	LX (R)	04	32,522	75,486		75,486	6,354		6,354	U
82 0604536N	Advanced Undersea Prototyping	04					78,589		78,589	U
83 0604653N	Joint Counter Radio Controlled IED Electronic Warfare (JCREW)	04	14,987	3,790		3,790				U
84 0604659N	Precision Strike Weapons Development Program	04		9,595		9,595	9,910		9,910	U
85 0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	21,916	20,203		20,203	23,971		23,971	U
86 0604786N	Offensive Anti-Surface Warfare Weapon Development	04	181,719	285,849		285,849	252,409		252,409	U
87 0605812M	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	04	8,970	32,149		32,149	23,197		23,197	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
88	0303354N	ASW Systems Development - MIP	04	6,495	9,835		9,835	9,110		9,110	U
89	0304270N	Electronic Warfare Development - MIP	04	332	580		580	437		437	U
		Advanced Component Development & Prototypes		4,357,168	5,022,272		5,022,272	4,662,867	41,897	4,704,764	
90	0603208N	Training System Aircraft	05	13,115	17,989		17,989	19,938		19,938	U
91	0604212N	Other Helo Development	05	34,436	11,101		11,101	6,268		6,268	U
92	0604214N	AV-8B Aircraft - Eng Dev	05	24,558	27,668		27,668	33,664		33,664	U
93	0604215N	Standards Development	05	52,842	53,049		53,049	1,300		1,300	U
94	0604216N	Multi-Mission Helicopter Upgrade Development	05	11,159	18,858		18,858	5,275		5,275	U
95	0604218N	Air/Ocean Equipment Engineering	05	2,126	4,515		4,515	3,875		3,875	U
96	0604221N	P-3 Modernization Program	05	698	1,514		1,514	1,909		1,909	U
97	0604230N	Warfare Support System	05	9,050	5,875		5,875	13,237		13,237	U
98	0604231N	Tactical Command System	05	52,287	73,533		73,533	36,323		36,323	U
99	0604234N	Advanced Hawkeye	05	171,189	217,645		217,645	363,792		363,792	U
100	0604245N	H-1 Upgrades	05	43,469	27,235		27,235	27,441		27,441	U
101	0604261N	Acoustic Search Sensors	05	24,395	31,235		31,235	34,525		34,525	U
102	0604262N	V-22A	05	50,188	76,483		76,483	174,423		174,423	U
103	0604264N	Air Crew Systems Development	05	14,503	12,665		12,665	13,577		13,577	U
104	0604269N	EA-18	05	18,653	46,921		46,921	116,761		116,761	U
105	0604270N	Electronic Warfare Development	05	27,250	20,113		20,113	48,766		48,766	U
106	0604273N	Executive Helo Development	05	356,567	507,093		507,093	338,357		338,357	U
107	0604274N	Next Generation Jammer (NGJ)	05	224,578	387,770		387,770	577,822		577,822	U

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Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Se
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108	0604280N	Joint Tactical Radio System - Navy (JTRS-Navy)	05	6,725	24,985		24,985	2,365		2,365	U
109	0604282N	Next Generation Jammer (NGJ) Increment II	05		13,000		13,000	52,065		52,065	U
110	0604307N	Surface Combatant Combat System Engineering	05	178,430	386,576		386,576	282,764		282,764	U
111	0604311N	LPD-17 Class Systems Integration	05	363	747		747	580		580	U
112	0604329N	Small Diameter Bomb (SDB)	05	53,950	57,144		57,144	97,622		97,622	U
113	0604366N	Standard Missile Improvements	05	50,241	115,644		115,644	120,561		120,561	U
114	0604373N	Airborne MCM	05	37,831	9,647		9,647	45,622		45,622	U
115	0604376M	Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) for Aviation	05	9,219	2,778		2,778				U
116	0604378N	Naval Integrated Fire Control - Counter Air Systems Engineering	05	14,903	23,695		23,695	25,750		25,750	U
117	0604404N	Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System	05	382,542	434,699		434,699				U
118	0604501N	Advanced Above Water Sensors	05	19,320	43,914		43,914	85,868		85,868	U
119	0604503N	SSN-688 and Trident Modernization	05	70,053	109,893		109,893	117,476		117,476	U
120	0604504N	Air Control	05	28,669	57,928		57,928	47,404		47,404	U
121	0604512N	Shipboard Aviation Systems	05	120,062	120,217		120,217	112,158		112,158	U
122	0604518N	Combat Information Center Conversion	05					6,283		6,283	U
123	0604522N	Air and Missile Defense Radar (AMDR) System	05	126,525	232,677		232,677	144,395		144,395	U
124	0604558N	New Design SSN	05	85,787	157,056		157,056	113,013		113,013	U

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125	0604562N	Submarine Tactical Warfare System	05	37,768	52,713		52,713	43,160		43,160	U
126	0604567N	Ship Contract Design/ Live Fire T&E	05	39,459	38,925		38,925	65,002		65,002	U
127	0604574N	Navy Tactical Computer Resources	05	3,884	4,096		4,096	3,098		3,098	U
128	0604580N	Virginia Payload Module (VPM)	05	106,223	167,719		167,719	97,920		97,920	U
129	0604601N	Mine Development	05	10,962	15,122		15,122	10,490		10,490	U
130	0604610N	Lightweight Torpedo Development	05	39,664	43,738		43,738	20,178		20,178	U
131	0604654N	Joint Service Explosive Ordnance Development	05	8,978	8,123		8,123	7,369		7,369	U
132	0604703N	Personnel, Training, Simulation, and Human Factors	05	5,925	7,686		7,686	4,995		4,995	U
133	0604727N	Joint Standoff Weapon Systems	05	4,389	405		405	412		412	U
134	0604755N	Ship Self Defense (Detect & Control)	05	64,704	145,336		145,336	134,619		134,619	U
135	0604756N	Ship Self Defense (Engage: Hard Kill)	05	94,534	86,811		86,811	114,475		114,475	U
136	0604757N	Ship Self Defense (Engage: Soft Kill/EW)	05	107,319	105,416		105,416	114,211		114,211	U
137	0604761N	Intelligence Engineering	05	200	2,053		2,053	11,029		11,029	U
138	0604771N	Medical Development	05	26,589	25,291		25,291	9,220		9,220	U
139	0604777N	Navigation/ID System	05	28,952	32,456		32,456	42,723		42,723	U
140	0604800M	Joint Strike Fighter (JSF) - EMD	05	487,940	537,901		537,901	531,426		531,426	U
141	0604800N	Joint Strike Fighter (JSF) - EMD	05	486,978	504,736		504,736	528,716		528,716	U
142	0604810M	Joint Strike Fighter Follow On Development - Marine Corps	05	10,086	20,798		20,798	74,227		74,227	U

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143	0604810N	Joint Strike Fighter Follow On Development - Navy	05	10,302	21,200		21,200	63,387		63,387	U
144	0605013M	Information Technology Development	05	2,670	4,824		4,824	4,856		4,856	U
145	0605013N	Information Technology Development	05	55,106	85,816		85,816	97,066		97,066	U
146	0605024N	Anti-Tamper Technology Support	05					2,500		2,500	U
147	0605212N	CH-53K RDTE	05	538,192	592,317		592,317	404,810		404,810	U
148	0605215N	Mission Planning	05					33,570		33,570	U
149	0605217N	Common Avionics	05					51,599		51,599	U
150	0605220N	Ship to Shore Connector (SSC)	05	41,616	7,778		7,778	11,088		11,088	U
151	0605327N	T-AO (X)	05					1,095		1,095	U
152	0605414N	Carrier Based Aerial Refueling System (CBARS)	05					89,000		89,000	U
153	0605450N	Joint Air-to-Ground Missile (JAGM)	05	6,104	25,898		25,898	17,880		17,880	U
154	0605500N	Multi-mission Maritime Aircraft (MMA)	05	297,380	156,293		156,293	59,126		59,126	U
155	0605504N	Multi-Mission Maritime (MMA) Increment III	05		91,616		91,616	182,220		182,220	U
156	0204202N	DDG-1000	05	196,987	103,179		103,179	45,642		45,642	U
157	0303167N	Pre-Auction Spectrum Relocation Fund	05	1,569							U
158	0303267N	Auctioned Spectrum Relocation Fund	05	4,569							U
159	0304231N	Tactical Command System - MIP	05	1,011	998		998	676		676	U
160	0304785N	Tactical Cryptologic Systems	05	10,157	17,785		17,785	36,747		36,747	U
161	0305124N	Special Applications Program	05	73,975	35,905		35,905	35,002		35,002	U

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162	0306250M	Cyber Operations Technology Development	05					4,942		4,942	U
		System Development & Demonstration		5,119,875	6,274,796		6,274,796	6,025,655		6,025,655	
163	0604256N	Threat Simulator Development	06	40,178	30,769		30,769	16,633		16,633	U
164	0604258N	Target Systems Development	06	66,251	71,152		71,152	36,662		36,662	U
165	0604759N	Major T&E Investment	06	121,108	61,234		61,234	42,109		42,109	U
166	0605126N	Joint Theater Air and Missile Defense Organization	06	4,800	6,995		6,995	2,998		2,998	U
167	0605152N	Studies and Analysis Support - Navy	06	3,412	4,011		4,011	3,931		3,931	U
168	0605154N	Center for Naval Analyses	06	43,054	47,071		47,071	46,634		46,634	U
169	0605285N	Next Generation Fighter	06	4,794	5,000		5,000	1,200		1,200	U
170	0605502N	Small Business Innovative Research	06	325,429							U
171	0605804N	Technical Information Services	06	1,290	925		925	903		903	U
172	0605853N	Management, Technical & International Support	06	83,789	83,024		83,024	87,077		87,077	U
173	0605856N	Strategic Technical Support	06	2,500	3,258		3,258	3,597		3,597	U
174	0605861N	RDT&E Science and Technology Management	06	72,943	76,948		76,948	62,811		62,811	U
175	0605863N	RDT&E Ship and Aircraft Support	06	127,634	132,122		132,122	106,093		106,093	U
176	0605864N	Test and Evaluation Support	06	335,791	351,912		351,912	349,146		349,146	U
177	0605865N	Operational Test and Evaluation Capability	06	16,423	17,985		17,985	18,160		18,160	U
178	0605866N	Navy Space and Electronic Warfare (SEW) Support	06	2,992	5,316		5,316	9,658		9,658	U

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179	0605867N	SEW Surveillance/Reconnaissance Support	06	8,325	6,519		6,519	6,500		6,500	U
180	0605873M	Marine Corps Program Wide Support	06	17,449	13,627		13,627	22,247		22,247	U
181	0605898N	Management HQ - R&D	06					16,254		16,254	U
182	0606355N	Warfare Innovation Management	06					21,123		21,123	U
183	0909980N	Judgment Fund Reimbursement	06		353		353				U
184	0909999N	Financing for Cancelled Account Adjustments	06	137	2		2				U
		Management Support		1,278,299	918,223		918,223	853,736		853,736	
186	0604402N	Unmanned Combat Air Vehicle (UCAV) Advanced Component and Prototype Development	07	35,309							U
187	0605525N	Carrier Onboard Delivery (COD) Follow On	07	8,873							U
188	0607658N	Cooperative Engagement Capability (CEC)	07					84,501		84,501	U
189	0607700N	Deployable Joint Command and Control	07					2,970		2,970	U
190	0101221N	Strategic Sub & Weapons System Support	07	93,912	96,404		96,404	136,556		136,556	U
191	0101224N	SSBN Security Technology Program	07	29,146	46,481		46,481	33,845		33,845	U
192	0101226N	Submarine Acoustic Warfare Development	07	4,366	4,700		4,700	9,329		9,329	U
193	0101402N	Navy Strategic Communications	07	13,535	16,558		16,558	17,218		17,218	U
194	0203761N	Rapid Technology Transition (RTT)	07	8,323	8,632		8,632				U
195	0204136N	F/A-18 Squadrons	07	84,976	135,755		135,755	189,125		189,125	U

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196	0204163N	Fleet Telecommunications (Tactical)	07	26,333	41,538		41,538	48,225		48,225	U
197	0204228N	Surface Support	07	3,000	36,045		36,045	21,156		21,156	U
198	0204229N	Tomahawk and Tomahawk Mission Planning Center (TMPC)	07	25,543	25,227		25,227	71,355		71,355	U
199	0204311N	Integrated Surveillance System	07	72,315	49,587		49,587	58,542		58,542	U
200	0204413N	Amphibious Tactical Support Units (Displacement Craft)	07	5,522	11,335		11,335	13,929		13,929	U
201	0204460M	Ground/Air Task Oriented Radar (G/ATOR)	07	90,577	65,598		65,598	83,538		83,538	U
202	0204571N	Consolidated Training Systems Development	07	38,359	34,325		34,325	38,593		38,593	U
203	0204574N	Cryptologic Direct Support	07	1,627	1,915		1,915	1,122		1,122	U
204	0204575N	Electronic Warfare (EW) Readiness Support	07	15,993	46,403		46,403	99,998		99,998	U
205	0205601N	HARM Improvement	07	17,377	23,708		23,708	48,635		48,635	U
206	0205604N	Tactical Data Links	07	135,582	142,361		142,361	124,785		124,785	U
207	0205620N	Surface ASW Combat System Integration	07	25,567	24,435		24,435	24,583		24,583	U
208	0205632N	MK-48 ADCAP	07	25,920	47,703		47,703	39,134		39,134	U
209	0205633N	Aviation Improvements	07	83,083	106,255		106,255	120,861		120,861	U
210	0205675N	Operational Nuclear Power Systems	07	104,023	101,323		101,323	101,786		101,786	U
211	0206313M	Marine Corps Communications Systems	07	82,576	77,909		77,909	82,159		82,159	U
212	0206335M	Common Aviation Command and Control System (CAC2S)	07	31,568	13,431		13,431	11,850		11,850	U

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213	0206623M	Marine Corps Ground Combat/ Supporting Arms Systems	07	49,173	48,590		48,590	47,877		47,877	U
214	0206624M	Marine Corps Combat Services Support	07	18,185	19,955		19,955	13,194		13,194	U
215	0206625M	USMC Intelligence/Electronic Warfare Systems (MIP)	07	16,178	12,671		12,671	17,171		17,171	U
216	0206629M	Amphibious Assault Vehicle	07	87,940	45,110		45,110	38,020		38,020	U
217	0207161N	Tactical AIM Missiles	07	36,361	71,016		71,016	56,285		56,285	U
218	0207163N	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	9,820	32,172		32,172	40,350		40,350	U
219	0219902M	Global Combat Support System - Marine Corps (GCSS-MC)	07					9,128		9,128	U
223	0303109N	Satellite Communications (SPACE)	07	34,716	47,312		47,312	37,372		37,372	U
224	0303138N	Consolidated Afloat Network Enterprise Services (CANES)	07	24,137	21,667		21,667	23,541		23,541	U
225	0303140N	Information Systems Security Program	07	22,655	28,081		28,081	38,510		38,510	U
227	0305160N	Navy Meteorological and Ocean Sensors-Space (METOC)	07	356	599		599				U
228	0305192N	Military Intelligence Program (MIP) Activities	07	6,166	6,207		6,207	6,019		6,019	U
229	0305204N	Tactical Unmanned Aerial Vehicles	07	8,505	8,550		8,550	8,436		8,436	U
230	0305205N	UAS Integration and Interoperability	07		41,831		41,831	36,509		36,509	U
231	0305208M	Distributed Common Ground/Surface Systems	07	10,916	1,105		1,105	2,100		2,100	U
232	0305208N	Distributed Common Ground/Surface Systems	07	18,146	23,149		23,149	44,571		44,571	U
233	0305220N	MQ-4C Triton	07	419,242	227,118		227,118	111,729		111,729	U

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234	0305231N	MQ-8 UAV	07	43,294	52,770		52,770	26,518		26,518	U
235	0305232M	RQ-11 UAV	07	682	635		635	418		418	U
236	0305233N	RQ-7 UAV	07	851	688		688	716		716	U
237	0305234N	Small (Level 0) Tactical UAS (STUASL0)	07	4,813	4,647		4,647	5,071		5,071	U
238	0305239M	RQ-21A	07	7,782	6,251		6,251	9,497		9,497	U
239	0305241N	Multi-Intelligence Sensor Development	07	17,751	39,645		39,645	77,965		77,965	U
240	0305242M	Unmanned Aerial Systems (UAS) Payloads (MIP)	07	1,900	9,246		9,246	11,181		11,181	U
241	0305421N	RQ-4 Modernization	07	30,000	129,892		129,892	181,266		181,266	U
242	0308601N	Modeling and Simulation Support	07	4,556	4,757		4,757	4,709		4,709	U
243	0702207N	Depot Maintenance (Non-IF)	07	20,678	24,185		24,185	49,322		49,322	U
244	0708011N	Industrial Preparedness	07	36,031							U
245	0708730N	Maritime Technology (MARITECH)	07	4,187	4,321		4,321	3,204		3,204	U
9999	9999999999	Classified Programs		1,197,753	1,492,185	35,747	1,527,932	1,228,460	36,426	1,264,886	U
		Operational Systems Development		3,196,179	3,561,983		3,597,730	3,592,934		3,629,360	
Total Research, Development, Test & Eval, Navy				16,067,423	18,111,247		18,146,994	17,276,301	78,323	17,354,624	

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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0604402N I <i>Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,439.664	35.309	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,474.973
3178: <i>Unmanned Combat Air System CV-Demo (UCAS-D)</i>	1,439.664	35.309	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,474.973

Program MDAP/MAIS Code: P388

A. Mission Description and Budget Item Justification

The 2005 Quadrennial Defense Review published February 2006 and OSD Advanced Technology & Logistics Executive Committee Memorandum of February 2006 supported direction to restructure the Joint Unmanned Combat Air System (UCAS) program into a new Navy UCAS program. The Navy UCAS program will develop an unmanned, longer-range, carrier-based aircraft capable of being air-refueled to provide greater standoff capability, to expand payload and launch options, and to increase naval reach and persistence. The Navy was directed to demonstrate carrier operations, including Autonomous Aerial Refueling, of a Low Observable (LO) planform UCAS and to mature required technologies to a Technology Readiness Level-6; which, is required for a potential follow on acquisition program.

The Navy UCAS, designed for autonomous launch and recovery as well as operations in the Carrier Control Area, is comprised of an Air Vehicle Segment, a Mission Control Segment (MCS) and a government led Aircraft Carrier Integration Segment. The scope of the Navy UCAS effort includes design, development, integration, and validation of an unmanned, LO planform Air Vehicle Segment and MCS in the land-based and shipboard environments. Evaluations will be conducted to investigate MCS interfaces with shipboard systems such as Primary Flight Control displays, Landing Safety Officer displays, and Carrier Air Traffic Control Center stations.

The Navy UCAS program will be structured to match program resources to United States Navy objectives and constraints with the goals of identifying and maturing critical technologies and reducing the risk of carrier integration of a UCAS. Candidate Technology Maturation efforts include transformational communications, advanced integrated propulsion, aircraft carrier suitable materials, LO sensors and apertures, sense and avoid functionality (in an LO environment), autonomous operations (software algorithms and interfaces), and computer resource data storage and access systems. Modeling, simulation, analysis, industrial capability assessments, system/component development, and analysis of architectures and concept designs are being developed as a result of the demonstration. Maturation of candidate technologies support the evaluation of alternatives needed for a future milestone decision.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0604402N I <i>Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	35.877	0.000	0.000	-	0.000
Current President's Budget	35.309	0.000	0.000	-	0.000
Total Adjustments	-0.568	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.568	0.000			

Change Summary Explanation

Technical: N/A

Schedule: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0604402N / Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev				Project (Number/Name) 3178 / Unmanned Combat Air System CV-Demo (UCAS-D)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3178: Unmanned Combat Air System CV-Demo (UCAS-D)	1,439.664	35.309	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,474.973
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy Unmanned Combat Air System (UCAS), designed for autonomous launch and recovery as well as operations in the Carrier Control Area, is comprised of an Air Vehicle Segment, a Mission Control Segment (MCS) and a government led Aircraft Carrier Integration Segment. The scope of the Navy UCAS effort includes design, development, integration, and validation of an unmanned, Low Observable (LO) planform Air Vehicle Segment and MCS in the land-based and shipboard environments. Evaluations will be conducted to investigate MCS interfaces with shipboard systems such as Primary Flight Control displays, Landing Safety Officer (LSO) displays, and Carrier Air Traffic Control Center (CATCC) stations.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	29.473	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The primary effort in the Navy UCAS program is design, development, integration and validation of Air Vehicle Segment, MCS and government led Aircraft Carrier Segment leading to a Carrier demonstration of an unmanned, LO planform UCAS system, and development of internal/external interface documents. In addition, design and development of hardware/software to support Autonomous Aerial Refueling (AAR) will be conducted. Shipboard evaluation of the Navy UCAS includes integration of the Navy UCAS with shipboard systems such as Primary Flight Control displays, LSO displays and CATCC stations.					
FY 2015 Accomplishments: Continued demonstration and integration efforts as directed by Chief of Naval Operations and Secretary of the Navy.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604402N / Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev	Project (Number/Name) 3178 / Unmanned Combat Air System CV-Demo (UCAS-D)
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Test and Evaluation Support <div style="text-align: right;">Articles:</div> FY 2015 Accomplishments: Continued UCAS Demonstration objectives as directed by Chief of Naval Operations and Secretary of the Navy. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A	4.746 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Management <div style="text-align: right;">Articles:</div> FY 2015 Accomplishments: Government management, engineering, and logistics support. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A	1.090 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	35.309	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604402N / <i>Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev</i>	Project (Number/Name) 3178 / <i>Unmanned Combat Air System CV-Demo (UCAS-D)</i>

D. Acquisition Strategy

In the 2005 Quadrennial Defense Review, the Navy was directed to restructure the Joint Unmanned Combat Air System (UCAS) program and develop an unmanned, longer-range carrier-based aircraft capable of being air-refueled to provide greater aircraft carrier standoff capability, to expand payload and launch options, and to increase naval reach and persistence. The primary goal is risk reduction for carrier integration while developing the critical data necessary to support a potential follow on acquisition milestone decision. The Navy UCAS effort will focus on designing, developing, and evaluating the core capabilities which safely demonstrate carrier interoperability. Currently, primary hardware development for the Navy UCAS effort is being performed under a Federal Acquisition Regulation based, cost plus incentive fee-type contract competitively awarded to a single contractor.

E. Performance Metrics

Completed airworthiness and envelope expansion testing. Conducted shore-based carrier suitability testing. Conducted F/A-18D surrogate aircraft testing with Nimitz class aircraft carrier. Conducted at sea flight test of X-47B air vehicles. Demonstrated Autonomous Aerial Refueling.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0604402N / Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev				3178 / Unmanned Combat Air System CV-Demo (UCAS-D)							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aviation/Ship Integration	WR	NAWCAD : MD	109.714	3.214	Nov 2014	0.000		0.000		-		0.000	0.000	112.928	-
Air Vehicle Integration	C/CPIF	Northrop Grumman Corporation : CA	47.730	19.664	Nov 2014	0.000		0.000		-		0.000	0.000	67.394	67.394
Systems Engineering	WR	NAWCAD : MD	63.654	6.433	Nov 2014	0.000		0.000		-		0.000	0.000	70.087	-
Product Development	Various	Various : Various	117.236	0.162	Dec 2014	0.000		0.000		-		0.000	0.000	117.398	-
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	945.517	0.000		0.000		0.000		-		0.000	0.000	945.517	-
Subtotal			1,283.851	29.473		0.000		0.000		-		0.000	0.000	1,313.324	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	20.861	0.000		0.000		0.000		-		0.000	0.000	20.861	-
Subtotal			20.861	0.000		0.000		0.000		-		0.000	0.000	20.861	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : MD	49.446	4.278	Nov 2014	0.000		0.000		-		0.000	0.000	53.724	-
Test & Evaluation	Various	Various : Various	1.765	0.468	Nov 2014	0.000		0.000		-		0.000	0.000	2.233	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	10.297	0.000		0.000		0.000		-		0.000	0.000	10.297	-
Subtotal			61.508	4.746		0.000		0.000		-		0.000	0.000	66.254	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604402N / Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev	Project (Number/Name) 3178 / Unmanned Combat Air System CV-Demo (UCAS-D)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor SEPM Support	C/CPIF	Various : Various	25.571	0.066	Jan 2015	0.000		0.000		-		0.000	0.000	25.637	25.637
Government Engineering Support	WR	NAWCAD : MD	26.631	0.874	Nov 2014	0.000		0.000		-		0.000	0.000	27.505	-
Program Management Support	WR	NAWCAD : MD	18.496	0.150	Nov 2014	0.000		0.000		-		0.000	0.000	18.646	-
Prior Year Mgmt cost no longer funded in the FYDP	Various	Various : Various	2.746	0.000		0.000		0.000		-		0.000	0.000	2.746	-
Subtotal			73.444	1.090		0.000		0.000		-		0.000	0.000	74.534	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		1,439.664	35.309	0.000	0.000	-	0.000	0.000	1,474.973	-

Remarks
FY15 funding continued demonstration and integration efforts as directed by Chief of Naval Operations and Secretary of Navy.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604402N / <i>Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev</i>	Project (Number/Name) 3178 / <i>Unmanned Combat Air System CV-Demo (UCAS-D)</i>
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Unmanned Combat Air Vehicle (UCAV) ADV CP/PROTO DEV	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Systems Development																												
Ship Integration	Ship Integration and Installations (Build 2)																											
Autonomous Aerial Refueling (AAR)	System Integration																											
	Surrogate/Air Vehicle Flight Test																											
Test & Evaluation																												
Surrogate Testing	Surrogate Testing																											
Airworthiness Testing																												
Land Based Carrier Control Area, Catapult Launch & Arrestment Testing	Land Based Carrier Control Area, Catapult Launch & Arrestment Testing																											
Sea Trials	Sea Trials																											
	CVN Integration Ops ▼																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604402N / <i>Unmanned Combat Air Veh(UCAV) Adv Cp/Proto Dev</i>	Project (Number/Name) 3178 / <i>Unmanned Combat Air System CV-Demo (UCAS-D)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Unmanned Combat Air Vehicle (UCAV) ADV CP/PROTO DEV</i>				
Systems Development: Ship Integration: Build 2	1	2015	1	2015
Systems Development: Autonomous Aerial Refueling (AAR): System Integration - AAR	1	2015	3	2015
Systems Development: Autonomous Aerial Refueling (AAR): Surrogate/Air Vehicle Flight Test - AAR	1	2015	4	2015
Test & Evaluation: Surrogate Testing: Surrogate Testing	1	2015	4	2015
Test & Evaluation: Land Based Carrier Control Area, Catapult Launch & Arrestment Testing: Land Based Carrier Control Area, Catapult Launch & Arrestment Testing	1	2015	2	2016
Test & Evaluation: Sea Trials: Sea Trials	1	2015	1	2015
Test & Evaluation: Sea Trials: CVN Integration Ops	1	2015	1	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0605525N I (U) <i>CARRIER ONBOARD DELIVERY (COD) FOLLOW ON</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1.230	8.873	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.103
3339: <i>Carrier Onboard Deliver Recapitalization</i>	1.230	8.873	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.103

A. Mission Description and Budget Item Justification

Funding supports the Engineering Analysis for development of an Engineering Change Proposal to modify an MV-22 into the C/MV-22 configuration to perform the COD mission. The Engineering Analysis will provide a proposed solution(s) to add (1) external conformal fuel tanks to provide the capability to meet the range requirements that the COD mission demands (2) an HF radio to transmit/receive beyond line of sight over water and (3) a Public Address system for use while transporting passengers.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

Due to the timing of the H.R. 2029, FY15 does not reflect Title VIII General Provisions which rescinded \$5.032M.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	8.873	0.000	0.000	-	0.000
Current President's Budget	8.873	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

Technical: Not applicable.
Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605525N / (U)CARRIER ONBOARD DELIVERY (COD) FOLLOW ON	Project (Number/Name) 3339 / Carrier Onboard Deliver Recapitalization
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3339: Carrier Onboard Deliver Recapitalization	1.230	8.873	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.103
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding supports the Engineering Analysis for development of an Engineering Change Proposal to modify a MV-22 into the C/MV-22 configuration to perform the COD mission. The Engineering Analysis will provide a proposed solution(s) to add (1) external conformal fuel tanks to provide the capability to meet the range requirements that the COD mission demands (2) an HF radio to transmit/receive beyond line of sight over water and (3) a Public Address system for use while transporting passengers.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Carrier Onboard Delivery Recapitalization	8.873	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Award the Engineering Analysis effort to provide the proposed solution(s) for the C/MV-22 to perform the COD Mission.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	8.873	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Government will issue a Basic Ordering Agreement (BOA) order to the Contractor.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605525N / (U)CARRIER ONBOARD DELIVERY (COD) FOLLOW ON	Project (Number/Name) 3339 / Carrier Onboard Deliver Recapitalization

E. Performance Metrics

Award the BOA order 2nd QTR FY15 and contractor will deliver solution(s) no later than end of 4th QTR 15.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605525N / (U)CARRIER ONBOARD DELIVERY (COD) FOLLOW ON	Project (Number/Name) 3339 / Carrier Onboard Deliver Recapitalization
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C/MV-22 Hardware Development	SS/CPFF	Bell Boeing : Ridley Park, PA	0.000	7.520	Jan 2015	0.000		0.000		-		0.000	0.000	7.520	7.520
Subtotal			0.000	7.520		0.000		0.000		-		0.000	0.000	7.520	7.520

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	WR	NAWCAD : Pax River, MD	1.000	1.100	Nov 2014	0.000		0.000		-		0.000	0.000	2.100	-
Program Management Support	Various	NAWCAD : Pax River, MD	0.230	0.253	Nov 2014	0.000		0.000		-		0.000	0.000	0.483	-
Subtotal			1.230	1.353		0.000		0.000		-		0.000	0.000	2.583	-

Remarks
FY14 funding will be used to prepare acquisition documentation.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.230	8.873	0.000	0.000	-	0.000	0.000	10.103	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0605525N / (U)CARRIER ONBOARD DELIVERY (COD) FOLLOW ON	Project (Number/Name) 3339 / Carrier Onboard Deliver Recapitalization

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Carrier Onboard Delivery Follow On				
Product Development: Development Contract Awards: Basic Ordering Agreement Award	2	2015	2	2015
Product Development: Development Contract Awards: Engineering Analysis for ECP development for C/MV-22	2	2015	4	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607658N I (U) <i>Cooperative Engagement Capability</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	601.250	0.000	0.000	84.501	-	84.501	88.945	96.246	92.749	94.273	Continuing	Continuing
2039: <i>COOP Engagement</i>	601.250	0.000	0.000	84.501	-	84.501	88.945	96.246	92.749	94.273	Continuing	Continuing

Program MDAP/MAIS Code: 582

A. Mission Description and Budget Item Justification

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture to support integrated fire control. CEC distributes sensor data from each USMC Command Control Unit, USA Aerostat, US Navy Ship, and US Navy Aircraft, or cooperating unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system. CEC significantly improves our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC provides critical connectivity and integration of over-land air defense systems capable of countering emerging air threats, including land attack cruise missiles, in a complex littoral environment.

Each military Service funds CEC development for their combat systems. The CEC Program Office oversees CEC development for all services.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and interface with Combat Systems and sensors. The DDS encodes and distributes own-ship sensor and engagement data and is a high capacity, jam resistant, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor that processes force levels of data in near real-time. The data is passed to the ship's combat system as high quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

The Navy implemented a Signal Data Processor (SDP) approach to modify the current equipment to meet reduced size, weight, cost, power and cooling objectives. This SDP approach also supports continuity for interoperability improvements and program protection, as well as supporting open architecture initiatives, and comms independence. The SDP hardware complies with Category 3 Open Architecture Computing Environment (OACE) standards. The SDP-S is being fielded fleet-wide to all US Navy, USMC, US Army, and FMS CEC units.

A family of antennas approach will be used to satisfy CEC requirements with lower life cycle costs (procurement, installation, and maintenance) and reduced weight (on mast and below deck). These antennas enable future capability as well as providing a solution extensible to additional platforms. This effort for development and production of Common Array Block (CAB) antennas was competitively awarded in late FY2013.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607658N I (U) <i>Cooperative Engagement Capability</i>
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In support of Interoperability, CEC will continue to work collaboratively with other Combat Systems programs (AWS, E-2C, E-2D, SSDS, CDLMS, C2P, and SGS/AC) to develop the software and implement design corrections and system changes. CEC will analyze the interactions of interoperability issues and impacts and provide collaboration for development of CEC and other system changes, develop the long term solutions, including the engineering process to validate small parts of developmental software ideas, and utilize M&S to validate design approaches in the systems engineering realm.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	84.501	-	84.501
Total Adjustments	0.000	0.000	84.501	-	84.501
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	85.704	-	85.704
• Rate/Misc Adjustments	0.000	0.000	-1.203	-	-1.203

Change Summary Explanation

FY 2017 funding increased by \$89.275 due to the realignment from Program Element 0603658N to Program Element 0607658N.
 FY 2017 decrease in Cooperative Engagement Capability by \$3.57M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.
 FY 2017 funding is decreased by \$1.20M for Rate/Misc Reductions.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0607658N / (U)Cooperative Engagement Capability				Project (Number/Name) 2039 / COOP Engagement			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2039: COOP Engagement	601.250	0.000	0.000	84.501	-	84.501	88.945	96.246	92.749	94.273	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture to support integrated fire control. CEC distributes sensor data from each USMC Command Control Unit, USA Aerostat, US Navy Ship, and US Navy Aircraft, or cooperating unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system. CEC significantly improves our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC provides critical connectivity and integration of over-land air defense systems capable of countering emerging air threats, including land attack cruise missiles, in a complex littoral environment.

Each military Service funds CEC development for their combat systems. The CEC Program Office oversees CEC development for all services.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and interface with Combat Systems and sensors. The DDS encodes and distributes own-ship sensor and engagement data and is a high capacity, jam resistant, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor that processes force levels of data in near real-time. The data is passed to the ship's combat system as high quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

The Navy implemented a Signal Data Processor (SDP) approach to modify the current equipment to meet reduced size, weight, cost, power and cooling objectives. This SDP approach also supports continuity for interoperability improvements and program protection, as well as supporting open architecture initiatives, and comms independence. The SDP hardware complies with Category 3 Open Architecture Computing Environment (OACE) standards. The SDP-S is being fielded fleet-wide to all US Navy, USMC, US Army, and FMS CEC units.

A family of antennas approach will be used to satisfy CEC requirements with lower life cycle costs (procurement, installation, and maintenance) and reduced weight (on mast and below deck). These antennas enable future capability as well as providing a solution extensible to additional platforms. This effort for development and production of Common Array Block (CAB) antennas was competitively awarded in late FY2013.

In support of Interoperability, CEC will continue to work collaboratively with other Combat Systems programs (AWS, E-2C, E-2D, SSSDs, CDLMS, C2P, and SGS/AC) to develop the software and implement design corrections and system changes. CEC will analyze the interactions of interoperability issues and impacts and

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provide collaboration for development of CEC and other system changes, develop the long term solutions, including the engineering process to validate small parts of developmental software ideas, and utilize M&S to validate design approaches in the systems engineering realm.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: E-2D</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Continue E-2D CEC AMIIP and NIFC-CA Enhancements systems engineering and software development efforts, and support E-2D CEC DSSC 3 FQT, IV&V, and DT flight testing in conjunction with E-2D DSSC 3 software development and test. Continue systems engineering efforts related to introduction of SDP-S -005 on E-2D.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	0.000	2.800	0.000	2.800
	-	-	-	-	-
<p>Title: B/L 2.1 INTEGRATION AND FOT&E TESTING</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Continue support of NIFC-CA testing. Complete Developmental Test (DT-D2) of AN/USG-2B with CVN 78. Continue Developmental Test (DT-D3) of AN/USG-2B with DDG 1000. Commence Operational Test (OT-D2) of AN/USG-2B with CVN 78.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	0.000	9.000	0.000	9.000
	-	-	-	-	-
<p>Title: SYSTEM IMPROVEMENTS</p>	0.000	0.000	20.901	0.000	20.901

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Continue robust development and integration efforts with ACB 16 combat system by completing CEC ACB 16 Critical Design Review (CDR) and delivering design for continued developmental/integration testing. Ramp up integration efforts for CEC with the CVN 78 combat system, including SSDS and the Dual Band Radar (DBR) and also ramp up integration efforts with the DDG 1000 combat system with the TSCE combat system and the Multi-Function Radar (MFR). The integration of the DBR and MFR are first of their kind and require significant integration work with a radar system that is different than any previously used by CEC. Moreover, much of the DBR and MFR radar integration efforts must be accomplished on the actual warships due to very limited availability of suitable radar assets at the Land Based Test Sites. Update CEC element certification on all platforms whenever a new feature is put into the CEC baseline. This involves testing to garner evidence, analyzing the results and then obtaining permission for the CEC element certification panel and then from the combat system certification panel(s) to field the update. This is done for seven versions of Aegis (6.1, 6.3, 7.1.3, 7.1.R, 8.1, 9A, and 9C.) Continue CAB antenna integration efforts.</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: NETWORK ENABLED ELECTRONIC DEFENSE SYSTEM (NEEDS)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans:</p>	0.000 -	0.000 -	6.600 -	0.000 -	6.600 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Begin developmental testing at Land Based Test Sites (LBTS) and while resolving trouble reports begin robust planning for engineering software load for temporary fielding during suitable developmental forum (Trident Warrior, Northern Edge etc.). Conduct Test Readiness Review (TRR). FY 2017 OCO Plans: N/A					
Title: FIELD ACTIVITIES FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Continue field activity support of CEC development and fielding efforts (including SE/IA, Technical Direction Agent, In-Service Engineering, Integrated Logistics Support planning) and program management support. Facilitate fielding of systems improvements and maintenance efforts (CAB, Airways Database, Master Ship List updates, etc.). FY 2017 OCO Plans: N/A	0.000 <i>Articles:</i> -	0.000 -	8.500 -	0.000 -	8.500 -
Title: COMMON ARRAY BLOCK (CAB) ANTENNA FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Conduct Pre-Production Readiness Review and begin system qualification functional and environmental testing. Begin initial fabrication of Pre-Production Antenna systems. FY 2017 OCO Plans:	0.000 <i>Articles:</i> -	0.000 -	10.200 -	0.000 -	10.200 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: AIR AND MISSILE DEFENSE RADAR (AMDR) Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Integrate CEC AMDR Adaptive Layer with Aegis Combat System Interface Support Equipment (CS ISE) and AMDR. Install and Check Out AMDR Adaptive Layer Stand Alone CEP (SACEP), remote SACEP, and Wrap Around Simulation Program (WASP) at the Advanced Radar Detection Laboratory (ARDEL) at the Pacific Missile Range Facility (PMRF) in support of live AMDR/CS testing. Participate in the Combat System Integration & Test (CIT) 1 at Naval Systems Computing Center (NSCC). Participate in the CIT-2 at ARDEL. Mature CEC AMDR Adaptive Layer based on findings from CIT-1 and 2. Begin development of the DDG-Flt III AMDR Adaptive Layer with additional functionality beyond what is developed to support the Early Integration Risk Reduction Effort. FY 2017 OCO Plans: N/A	0.000	0.000	9.500	0.000	9.500
	-	-	-	-	-
Title: NAVAL INTEGRATED FIRE CONTROL-COUNTER AIR (NIFC-CA) Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Continue development of NIFC CA Increment 2 CEC software with Wrap Around Simulation Program (WASP) updates, and prototyping of advanced kernel and adaptive layer functions. Conduct Preliminary Design Review (PDR). FY 2017 OCO Plans:	0.000	0.000	5.700	0.000	5.700
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: FIRE CONTROL LOOP IMPROVEMENT INITIATIVE (FCLIP) PHASE 2 Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Continue development efforts for SSDS Combat System updates, SPQ-9B and CIWS sensor integration and begin planning efforts for follow-on integration and testing phases in close collaboration with other IWS elements in preparation for fielding. FY 2017 OCO Plans: N/A	0.000	0.000	9.400	0.000	9.400
	-	-	-	-	-
Title: CEC INCREMENT 2 Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Begin Composite Surface Tracking (CST) development effort, with System Functional Review (SFR) and System Requirement Review (SRR), to integrate surface radar data and provide it across the CEC Data Distribution System (DDS) Radio to all other networked platforms. In addition to leveraging ongoing Close In Weapons System (CIWS) Sensor Adaptive Layer efforts in FCLIP, begin development of advanced CEC kernel functions to provide surface tracking specific environmental filters to also leverage surface radar measurements from existing sensors. Develop conceptual approach leading to a 2018 demonstration of an Automated Battle Management Aid (ABMA). Coordinate with candidate ABMA's such as the Electronic Warfare Battle	0.000	0.000	1.900	0.000	1.900
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Management (EWBM) and Force Level Radar Resource Manager (FLRRM) and examine approaches with potential for successful way forward to field force level features across battlegroups.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	84.501	0.000	84.501

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• SCN: Navy, SCN	11.200	34.100	17.700	-	17.700	31.300	18.100	12.500	12.700	64.000	504.431
• APN/0204152N: Navy, APN	15.986	16.280	19.914	-	19.914	16.925	10.358	10.565	10.776	57.200	375.987
• OPN/2606: CEC	33.939	25.695	22.034	-	22.034	34.401	32.066	32.047	31.863	66.525	1,035.295
• RDT&E/0206313M: USMC	0.752	0.762	3.487	-	3.487	2.092	1.255	0.752	0.730	0.000	31.700
• RDT&E/0206335M: USMC	0.603	0.315	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.352
• O&M,N/0206626M: USMC	3.508	1.396	3.254	-	3.254	3.157	3.062	2.970	2.881	0.000	25.775
• PMC/0206313M: USMC	1.924	6.266	6.480	-	6.480	8.070	3.500	3.550	0.000	0.000	30.570
• OPN/0960: CG/MOD	21.900	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	59.737
• OPN/0900: DDG/MOD	5.000	2.400	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	63.911

Remarks

D. Acquisition Strategy

CEC Acquisition Strategy (AS) approved by OSD (AT&L) on 19 January 2010. CEC Acquisition Plan (AP) approved September 2013. Full Rate Production for CEC AN/USG-3B variant approved April 2014.

Contracts:

Common Array Block (CAB) antenna - contract competitively awarded 4Qtr FY2013.
 CEC Design Agent/Engineering Services (DA/ES) follow-on sole source contract awarded 4Qtr FY2013.
 CEC Production - New contract will be competitively awarded in 2Qtr FY2015.
 CEC DA/ES contract will be competitively awarded 1Qtr FY2019.

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E. Performance Metrics

- Complete the adaptive layer development for the E-2D aircraft. Provide technical support for installation and integration in the Northrop Grumman Systems Integration Laboratory, on board the test aircraft and support the Developmental testing. Continue E-2D Advanced Hawkeye aircraft CEC integration efforts.
- Continue AEGIS Advance Capability Builds CEC integration and demonstration efforts.
- Continue Naval Integrated Fire Control - Counter Air (NIFC-CA) CEC integration and demonstration efforts.
- Continue Crypto Modernization Tech Refresh efforts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607658N / (U)Cooperative Engagement Capability					Project (Number/Name) 2039 / COOP Engagement						
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Design Agent/Engineering Services	C/CPFF	Raytheon : St. Petersburg, FL	127.395	0.000		0.000		11.097	Jan 2017	-		11.097	Continuing	Continuing	Continuing
TDA	C/CPFF	JHU/APL : Laurel, MD	78.150	0.000		0.000		10.960	Feb 2017	-		10.960	Continuing	Continuing	Continuing
SI/DA	C/CPAF	General Dynamics : Fairfax, VA	23.979	0.000		0.000		0.000		-		0.000	0.000	23.979	-
SI/DA	C/CPAF	Award Fees : Not Specified	2.903	0.000		0.000		0.000		-		0.000	0.000	2.903	-
DDG 1000	C/CPAF	Raytheon : Massachusetts	10.983	0.000		0.000		0.000		-		0.000	0.000	10.983	-
DDG 1000	C/CPAF	Award Fees : Not Specified	0.447	0.000		0.000		0.000		-		0.000	0.000	0.447	-
NIFC-CA Integration	TBD	Various : Not Specified	41.799	0.000		0.000		5.700	Jan 2017	-		5.700	Continuing	Continuing	Continuing
In-Service Engineering Activity	WR	NSWC : Port Hueneme, CA	6.463	0.000		0.000		1.825	Dec 2016	-		1.825	Continuing	Continuing	Continuing
Software Support Activity/ SEIA	WR	NSWC : Dahlgren, VA	19.718	0.000		0.000		1.884	Dec 2016	-		1.884	Continuing	Continuing	Continuing
Production Engineering Activity	WR	NSWC : Crane, IN	5.694	0.000		0.000		0.000		-		0.000	0.000	5.694	-
JTRS	TBD	Various : Not Specified	8.500	0.000		0.000		0.000		-		0.000	0.000	8.500	-
Various	TBD	Miscellaneous : Not Specified	31.873	0.000		0.000		2.635	Dec 2016	-		2.635	Continuing	Continuing	Continuing
NAVSSI	WR	SPAWAR : San Diego, CA	0.368	0.000		0.000		0.000		-		0.000	0.000	0.368	-
Certification	MIPR	NSA : Fort Meade, MD	1.200	0.000		0.000		0.000		-		0.000	0.000	1.200	-
Certification	WR	SPAWAR : Charleston, SC	0.930	0.000		0.000		0.000		-		0.000	0.000	0.930	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Exercises	WR	Various : Not Specified	3.744	0.000		0.000		0.000		-		0.000	0.000	3.744	-
LBTS Testing	WR	CDSA Dam Neck : Virginia Beach, VA	7.495	0.000		0.000		0.500	Dec 2016	-		0.500	Continuing	Continuing	Continuing
LBTS Testing	WR	SCSC : Wallops Island, VA	7.083	0.000		0.000		0.500	Jan 2017	-		0.500	Continuing	Continuing	Continuing
E-2D Integration	TBD	Various : Not Specified	47.758	0.000		0.000		2.800	Feb 2017	-		2.800	Continuing	Continuing	Continuing
MSI/NCCT	MIPR	Wright Patterson AFB : Dayton, OH	1.228	0.000		0.000		0.000		-		0.000	0.000	1.228	-
Common Array Block Development	C/CPFF	Various : Not Specified	40.561	0.000		0.000		10.200	Jan 2017	-		10.200	Continuing	Continuing	Continuing
NEEDS	C/CPFF	Various : Not Specified	31.930	0.000		0.000		6.600	Feb 2017	-		6.600	Continuing	Continuing	Continuing
AMDR	C/CPFF	Various : Not Specified	12.012	0.000		0.000		9.500	Feb 2017	-		9.500	Continuing	Continuing	Continuing
JTMC	C/CPFF	Raytheon : St. Petersburg, FL	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
FCLIP	C/CPFF	Various : Not Specified	7.100	0.000		0.000		9.400	Feb 2017	-		9.400	Continuing	Continuing	Continuing
CEC Increment 2	C/CPFF	Various : Not Specified	0.000	0.000		0.000		1.900	Feb 2017	-		1.900	Continuing	Continuing	Continuing
Subtotal			520.313	0.000		0.000		75.501		-		75.501	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB Support	C/CPFF	Raytheon : St. Petersburg, FL	5.114	0.000		0.000		1.113	Feb 2017	-		1.113	Continuing	Continuing	Continuing
Test/ACB Support	C/CPFF	JHU/APL : Laurel, MD	2.676	0.000		0.000		1.058	Feb 2017	-		1.058	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	WR	NRL : Washington, DC	0.313	0.000		0.000		0.000		-		0.000	0.000	0.313	-
Test/ACB Support	WR	NSWC : Port Hueneme, CA	24.386	0.000		0.000		1.895	Feb 2017	-		1.895	Continuing	Continuing	Continuing
Air Operations Test Support	WR	NAVAIR (PMA207) : Patuxent River, MD	10.187	0.000		0.000		1.047	Feb 2017	-		1.047	Continuing	Continuing	Continuing
Test Data Reduction Analysis	WR	NSWC : Corona, CA	17.934	0.000		0.000		1.334	Feb 2017	-		1.334	Continuing	Continuing	Continuing
Test Support	WR	COMOPTEVFOR : Norfolk, VA	12.607	0.000		0.000		1.175	Feb 2017	-		1.175	Continuing	Continuing	Continuing
Test/ACB Support	WR	NSWC : Dahlgren, VA	2.290	0.000		0.000		1.378	Feb 2017	-		1.378	Continuing	Continuing	Continuing
Subtotal			75.507	0.000		0.000		9.000		-		9.000	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	C/FFP	Booz Allen & Hamilton : Washington, DC	5.070	0.000		0.000		0.000		-		0.000	0.000	5.070	-
Program Management Support	C/FFP	Tech Marine : Washington, DC	0.360	0.000		0.000		0.000		-		0.000	0.000	0.360	-
Subtotal			5.430	0.000		0.000		0.000		-		0.000	0.000	5.430	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			601.250	0.000	0.000	84.501	-	84.501	-	-	-

Remarks

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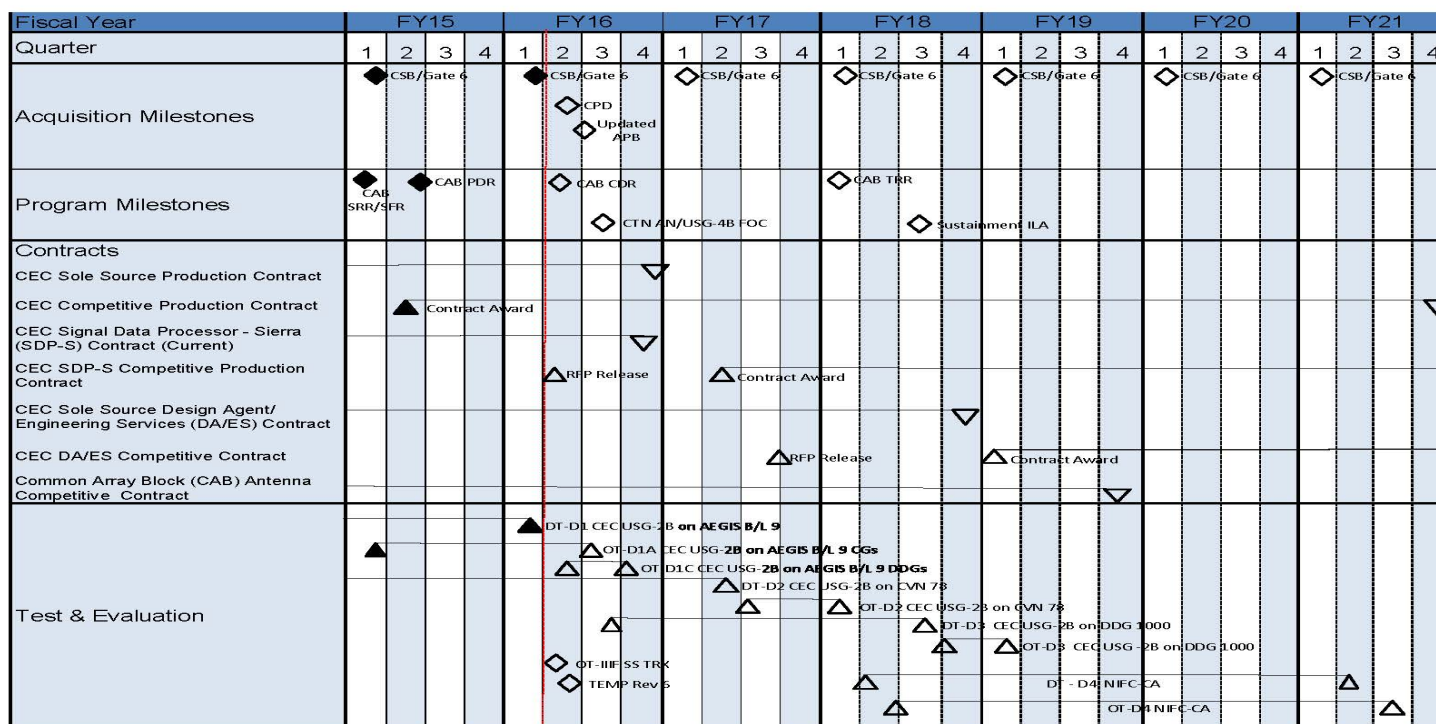
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
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R-1 Program Element (Number/Name)
PE 0607658N / (U)Cooperative
Engagement Capability

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2039 / COOP Engagement



- ◆ Actual Milestone Completion
- ◇ Planned Milestone Completion
- ▲ Actual Event Start/Completion
- △ Planned Event Start/Completion
- ↓ Current Date

- Acronym List**
- | | |
|---|---|
| <p>APB: Acquisition Program Baseline
B/L: Baseline
CAB: Common Array Block
CDR: Critical Design Review
CEC: Cooperative Engagement Capability
CIT: CEC Interim Trainer
CPD: Capabilities Production Document
CSB: Configuration Steering Board
CTN: CEC Tracking Network
DA/ES: Design Agent/Engineering Services
DT: Development Test
FOG: Full Operational Capability</p> | <p>FY: Fiscal Year
ILA: Independent Logistics Assessment
NIFC-CA: Naval Integrated Fire Control - Counter Air
OT: Operational Test
PDR: Preliminary Design Review
RFP: Request For Proposal
SDP-S: Signal Data Processor - Sierra
SFR: System Functional Review
SRR: System Requirements Review
SS TRX: Supersonic Track Ex
TEMP: Test and Evaluation Master Plan
TRR: Technical Readiness Review</p> |
|---|---|

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2039				
FY15 CSB/Gate 6	1	2015	1	2015
FY16 CSB/Gate 6	1	2016	1	2016
FY17 CSB/Gate 6	1	2017	1	2017
FY18 CSB/Gate 6	1	2018	1	2018
FY19 CSB/Gate 6	1	2019	1	2019
FY20 CSB/Gate 6	1	2020	1	2020
FY21 CSB/Gate 6	1	2021	1	2021
CPD	2	2016	2	2016
Updated APB	3	2016	3	2016
CAB SRR/SFR	1	2015	1	2015
CAB PDR	2	2015	2	2015
CAB CDR	2	2016	2	2016
CAB TRR	1	2018	1	2018
Sustainment ILA	3	2018	3	2018
CTN AN/USG-4B FOC	3	2016	3	2016
CEC Sole Source Production Contract	1	2015	4	2016
CEC Competitive Production Contract	2	2015	4	2021
CEC SDP-S Competitive Production Contract	2	2017	4	2021
CEC Design Agent/Engineering Services (DA/ES) Contract	1	2015	4	2018
CEC DA/ES Competitive Contract	1	2019	4	2021
DT-D1 CEC USG-2B on AEGIS B/L 9	1	2015	1	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607658N / (U)Cooperative Engagement Capability	Project (Number/Name) 2039 / COOP Engagement
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
OT-D1A CEC USG-2B on AEGIS B/L 9 CGs	1	2015	3	2016
OT-D1C CEC USG-2B on AEGIS B/L 9 DDGs	2	2016	4	2016
DT-D2 CEC USG-2B on CVN 78	1	2015	2	2017
OT-D2 CEC USG-2B on CVN 78	3	2017	1	2018
DT-D3 CEC USG-2B on DDG 1000	3	2016	3	2018
OT-D3 CEC USG-2B on DDG 1000	4	2018	1	2019
OT-IIIIF SS TRX	2	2016	2	2016
TEMP Rev 6	2	2016	2	2016
DT-D4 NIFC-CA	2	2018	2	2021
OT-D4 NIFC-CA	2	2018	3	2021
CEC SDP-S Contract	1	2015	4	2016
Common Array Block (CAB) Contract	1	2015	4	2019
SDP-S RFP Release	2	2016	2	2016
DA/ES RFP Release	4	2017	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0607700N I (U) <i>Deployable Joint Command and Control</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	2.970	-	2.970	3.160	3.244	3.309	3.376	Continuing	Continuing
3050: <i>Deployable JT Command and Control</i>	0.000	0.000	0.000	2.970	-	2.970	3.160	3.244	3.309	3.376	Continuing	Continuing

Note

Funding for FY17 and out has been moved from PE 0603237N to PE 0607700N as part of the BLI consolidation effort.

A. Mission Description and Budget Item Justification

Deployable Joint Command and Control (DJC2) provides a self-contained, standardized, rapidly deployable, modular, scalable, and reconfigurable joint command and control (C2) capability to designated Geographic Combatant Commands (GCCs). DJC2 is the materiel solution to Defense Planning Guidance that called for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 provides GCCs and JFCs a mission critical, integrated family of systems with which to plan, control, coordinate, execute, and assess operations. It is designed to deploy rapidly, set up within hours, and quickly provide necessary C2 mission and collaboration functionality across the full spectrum of JTF operations. The DJC2 has also been deployed in support of Humanitarian Assistance and Disaster Relief (HA/DR) efforts. The capability is intended for all levels of conflict and will be reconfigurable to meet specific GCC and JTF mission requirements. This capability is interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

B. Program Change Summary (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	2.970	-	2.970
Total Adjustments	0.000	0.000	2.970	-	2.970
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	3.090	-	3.090
• Rate/Misc Adjustments	0.000	0.000	-0.120	-	-0.120

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607700N / (U) <i>Deployable Joint Command and Control</i>	
<u>Change Summary Explanation</u> Decrease in Deployable Joint Command and Control (DJC2) by \$0.1M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0607700N / (U)Deployable Joint Command and Control				Project (Number/Name) 3050 / Deployable JT Command and Control			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3050: <i>Deployable JT Command and Control</i>	0.000	0.000	0.000	2.970	-	2.970	3.160	3.244	3.309	3.376	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding for FY17 and out has been moved from PE 0603237N to PE 0607700N as part of the BLI consolidation effort.

A. Mission Description and Budget Item Justification

Deployable Joint Command and Control (DJC2) provides a self-contained, standardized, rapidly deployable, modular, scalable, and reconfigurable joint command and control (C2) capability to designated Geographic Combatant Commands (GCCs). DJC2 is the materiel solution to Defense Planning Guidance that called for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 provides GCCs and JFCs a mission critical, integrated family of systems with which to plan, control, coordinate, execute, and assess operations. It is designed to deploy rapidly, set up within hours, and quickly provide necessary C2 mission and collaboration functionality across the full spectrum of JTF operations. The DJC2 has also been deployed in support of Humanitarian Assistance and Disaster Relief (HA/DR) efforts. The capability is intended for all levels of conflict and will be reconfigurable to meet specific GCC and JTF mission requirements. This capability is interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces. Note that DJC2 is not a follow-on or replacement system for the joint Global Command and Control Systems (GCCS); rather, DJC2 employs a GCCS in its suite of applications, ensuring interoperability with the worldwide-installed base of GCCS-J.

FY17 funds development of efforts for systems engineering, integration, and DJC2 Test Bed. Focus areas include development efforts of emerging cyber security technologies.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Systems Engineering & Integration	0.000	0.000	1.242	0.000	1.242
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607700N / (U)Deployable Joint Command and Control	Project (Number/Name) 3050 / Deployable JT Command and Control

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue development efforts of emerging information assurance and cloud technologies as well as enhanced joint interoperability capabilities to meet warfighter needs. FY 2017 OCO Plans: N/A					
Title: DJC2 RDT&E Test Bed FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Test and demonstrate interoperability and enhanced cyber security capabilities. Continue to use DJC2 test bed for software testing and development of new capabilities. FY 2017 OCO Plans: N/A	0.000	0.000	1.728	0.000	1.728
Articles:	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	0.000	0.000	2.970	0.000	2.970

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN /2804: DJC2	1.205	1.314	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	162.717
• OPN /2906: DJC2	0.000	0.000	1.500	-	1.500	2.500	2.201	2.250	2.297	136.887	147.635

Remarks

D. Acquisition Strategy
This RDT&E line supports an evolutionary acquisition strategy. The intent of this strategy is to: develop a system based upon a current understanding of joint requirements; rapidly field systems based upon those requirements; analyze operational utilization of the systems; and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. The baseline configuration is based upon existing Command, Control, Communications, Computers, & Intelligence (C4I) systems, scaled to the Combatant Command level. The follow-on configurations will include newly developed capabilities based on emergent, joint requirements and operational feedback based upon utilization of earlier delivered systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607700N / (U)Deployable Joint Command and Control	Project (Number/Name) 3050 / Deployable JT Command and Control

E. Performance Metrics

The Deployable Joint Command and Control (DJC2) program continues to identify, evaluate and test a minimum of 3 - 5 new technologies per year based on emergent / joint requirements for potential insertion into the DJC2 system upgrade plan.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
1319 / 7				PE 0607700N / (U)Deployable Joint Command and Control				3050 / Deployable JT Command and Control								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Systems Engineering	WR	NSWC : PCD	0.000	0.000		0.000		0.907	Dec 2016	-		0.907	20.091	20.998	-	
Hardware Development	WR	NSWC : PCD	0.000	0.000		0.000		1.018	Dec 2016	-		1.018	38.405	39.423	-	
Subtotal			0.000	0.000		0.000		1.925		-		1.925	58.496	60.421	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Software Integration	WR	NSWC : PCD	0.000	0.000		0.000		0.557	Dec 2016	-		0.557	12.978	13.535	-	
Subtotal			0.000	0.000		0.000		0.557		-		0.557	12.978	13.535	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WR	NSWC : PCD	0.000	0.000		0.000		0.153	Dec 2016	-		0.153	6.017	6.170	-	
Operational Test & Evaluation	WR	NSWC : PCD	0.000	0.000		0.000		0.147	Dec 2016	-		0.147	Continuing	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		0.300		-		0.300	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Support	WR	NSWC : PCD	0.000	0.000		0.000		0.188	Dec 2016	-		0.188	12.103	12.291	-	
Subtotal			0.000	0.000		0.000		0.188		-		0.188	12.103	12.291	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy								Date: February 2016					
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0607700N / (U)Deployable Joint Command and Control				Project (Number/Name) 3050 / Deployable JT Command and Control					
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		2.970		-		2.970	-	-	-

Remarks

Funding for FY17 and out has been moved from PE 0603237N to PE 0607700N as part of the BLI consolidation effort.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0607700N / (U)Deployable Joint Command and Control	Project (Number/Name) 3050 / Deployable JT Command and Control

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3050				
System Development: Developmental Test/Operational Test: Developmental Test/Operational Test FY 2017	3	2017	3	2017
System Development: Developmental Test/Operational Test: Developmental Test/Operational Test FY 2018	3	2018	3	2018
System Development: Developmental Test/Operational Test: Developmental Test/Operational Test FY 2019	3	2019	3	2019
System Development: Developmental Test/Operational Test: Developmental Test/Operational Test FY 2020	3	2020	3	2020
System Development: Developmental Test/Operational Test: Developmental Test/Operational Test FY 2021	3	2021	3	2021
Production: DJC2 System Enhancements: DJC2 System Enhancement Deliveries	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	872.314	93.912	96.404	136.556	-	136.556	128.286	81.067	82.811	38.841	Continuing	Continuing
0951: <i>Joint Warhead Fuze Sustainment Program</i>	217.121	81.696	84.765	111.857	-	111.857	108.787	63.568	65.185	20.826	Continuing	Continuing
2228: <i>Technical Applications Programs</i>	633.772	9.697	9.000	22.123	-	22.123	16.744	14.700	14.760	15.084	Continuing	Continuing
3158: <i>Integrated Nuclear Weapons Security Sys Dev</i>	21.421	2.519	2.639	2.576	-	2.576	2.755	2.799	2.866	2.931	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 178

A. Mission Description and Budget Item Justification

The Joint Warhead Fuze Sustainment Program (0951) is an effort to develop advanced components to improve the reliability, safety, and security of Arming, Fuzing and Firing (AF&F) systems for nuclear reentry systems. The current effort is focused on supporting the alteration of the AF&F system for the MK5/W88 system which will be five years beyond its design life at the scheduled deployment of the AF&F alteration. This effort also supports future utilization of the developed components by the US Air Force and United Kingdom.

The Technology Applications Program (2228) supports the TRIDENT II (D5) Submarine Launched Ballistic Missile (SLBM) that provides the U.S. a weapon system with greater accuracy and payload capability as compared to the TRIDENT I (C4) system. TRIDENT II enhances U.S. strategic deterrence providing a survivable, sea-based system capable of engaging the full spectrum of potential targets with fewer submarines. The Multi-Star Enhanced Prelaunch (MEP) program commenced in FY16. This system leverages the capability of the D5 Life Extension Guidance (Mk6 Mod1) to sight two stars vice one combined with the interface updates to the Fire Control and Navigation. Allowing for in-flight correction, the potential to operate in environments where GPS is denied, and may provide future relief to the strict tolerance requirements of the strategic navigator on the current OHIO class submarines and the OHIO Class Replacement program. The Systems Engineering Modeling and Simulation capability will consist of three elements: Model Based Design, Strategic Weapon System (SWS) Integrated Modeling and Simulation/Common Architecture & Framework, and SWS Enhancement Ground Test. This effort will provide the capability to comprehensively evaluate and test the integrated SWS within representative operational environments, providing unprecedented visibility across the SWS and system performance characterization equivalent to flight testing. This capability will enable trade space analysis to identify technical margin, subsystem interactions, and lifecycle affordability opportunities to include other services and be able to identify the benefits and risks of commonality to the individual programs, requirements and CONOPs modifications that could facilitate commonality, potential common acquisition strategies between the services, and total life cycle cost implications.

The Integrated Nuclear Weapons Security System (INWSS) (3158) efforts support the Nuclear Weapons Security program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landside at Naval Submarine Base,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>
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Kings Bay, or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The Chief of Naval Operations (CNO) has assigned the Strategic Systems Programs (SSP), the FBM program manager, with mission responsibility for the safeguard of FBM nuclear technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies. These efforts will improve countermeasure technologies to address detection, delay and denial.

FY15 Congressional add for Missile Component Development.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	94.525	107.039	129.957	-	129.957
Current President's Budget	93.912	96.404	136.556	-	136.556
Total Adjustments	-0.613	-10.635	6.599	-	6.599
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-10.282			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.025	-0.353			
• SBIR/STTR Transfer	-0.589	0.000			
• Program Adjustments	0.000	0.000	9.600	-	9.600
• Rate/Misc Adjustments	0.001	0.000	-3.001	-	-3.001

Change Summary Explanation

Decrease in Strategic Sub & Wpns Sys Supt by \$0.640M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Funding reduced in FY16 (10.282) for Joint Fuze program execution and (.353) for judgment fund claim.

Funding increased in FY17 (9.600) within the Technical Applications Program project (2228). Funding reduced (2.361) for rate and inflation adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>				Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0951: <i>Joint Warhead Fuze Sustainment Program</i>	217.121	81.696	84.765	111.857	-	111.857	108.787	63.568	65.185	20.826	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 178												

A. Mission Description and Budget Item Justification

The Joint Warhead Fuze Sustainment Program is an effort to develop advanced components to improve the reliability, safety, and security of AF&F systems for nuclear reentry systems. The current effort is focused on supporting the alteration of the AF&F system for the MK5/W88 system which will be five years beyond its design life at the scheduled deployment of the AF&F alteration. This effort also supports future utilization of the developed components by the US Air Force and United Kingdom.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: TRIDENT II	81.696	84.765	111.857	0.000	111.857
Articles:	-	-	-	-	-
Description: Identify, prioritize, develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs.					
FY 2015 Accomplishments: Continued development, proofing, demonstration, and technology maturation of identified advanced technologies for future AF&Fs Supported engineer working groups. Continued AF&F sub-assembly design demonstrations Continued development of advanced safety and surety architecture solutions. Continued detailed design Continued to develop and implement software changes due to AF&F Conducted performance assessment of tested designs Conducted production engineering Initiated pre-production line development and initial builds Procured material for qualification testing; Commercial-Off-The-Shelf (COTS) qualification testing					
FY 2016 Plans: Continue development, proofing, demonstration of identified advanced technologies for future AF&Fs Support engineer working groups and program reviews.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue AF&F sub-assembly design demonstrations Continue development of advanced safety and surety architecture solutions. Continue detailed design Continue to develop and implement software changes due to AF&F Conduct performance assessment of tested designs Conduct production engineering Begin missile integration of the Mk5A Alt 370 fuze development, and perform pre-flight test and analysis Design, develop and qualify production tools and processes, testers, gauges, AF&F simulators and trainers Due to the congressional reduction of \$10.282M these efforts will be at a reduced level. The program is currently exploring options to keep FPU on schedule. <i>FY 2017 Base Plans:</i> Continue development, proofing, demonstration of identified advanced technologies for future AF&Fs Support engineer working groups and program reviews. Continue AF&F sub-assembly design demonstrations Continue development of advanced safety and surety architecture solutions. Continue detailed design Continue to develop and implement software changes due to AF&F Conduct performance assessment of tested designs Conduct production engineering Continue missile integration of the Mk5A Alt 370 fuze development, and perform pre-flight test and analysis Continue design, develop and qualify production tools and processes, testers, gauges, AF&F simulators and trainers Flight Test and integration Conduct FCET 53 flight experiment system test and integration, drawing & procedure updates, and SPALT proofing Begin Production Proof In (PPI) builds <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	81.696	84.765	111.857	0.000	111.857

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RD TEN/3219: <i>SBSD Nuclear Technology Development</i>	369.964	419.273	390.326	-	390.326	389.279	281.218	270.091	149.700	Continuing	Continuing
• RD TEN/3220: <i>Advanced Submarine System Development</i>	796.804	971.393	700.811	-	700.811	757.737	476.140	198.968	330.466	Continuing	Continuing
• RD TEN/3237: <i>Launch Test Facility</i>	36.470	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.470
• MILCON/0805376N: <i>Ohio Replacement Power and Propulsion Facility</i>	25.985	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	25.985
• MILCON/0901211N: <i>MCON Design Funds</i>	0.364	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.364
• OPN/5358: <i>SWS Modernization Funds</i>	209.583	240.694	215.138	-	215.138	245.396	238.665	254.815	243.736	0.000	2,399.865
• WPN/1250: <i>TRIDENT II Mods</i>	1,161.342	1,089.064	1,103.086	-	1,103.086	1,140.542	1,182.066	1,235.327	1,259.934	5,194.683	24,531.857
• OMN/1D2D: <i>Fleet Ballistic Missile</i>	994.191	1,034.668	1,030.267	-	1,030.267	1,046.348	1,066.921	1,127.576	1,151.370	0.000	8,420.307
• SCN/1045: <i>OHIO Replacement Submarine</i>	0.000	0.000	773.138	-	773.138	787.130	2,766.991	1,311.541	3,611.187	0.000	9,249.987

Remarks

D. Acquisition Strategy

Contracts will continue to be awarded to those sources who were engaged in the Mk4LE Reentry Body development program and are currently engaged in the production and/or operational support of the deployed Mk4LE Reentry Body on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

E. Performance Metrics

Not applicable

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Warhead Fuze Sustainment DOE	MIPR	DOE : NM	190.073	62.973	Jan 2015	62.607	Nov 2015	91.257	Nov 2016	-		91.257	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment ITT	SS/CPFF	ITT : VA	7.680	3.227	Nov 2014	4.000	Oct 2015	4.000	Nov 2016	-		4.000	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment LMMS	SS/CPFF	LMMS : CA	13.000	10.185	Nov 2014	11.702	Nov 2015	11.930	Nov 2016	-		11.930	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment	WR	NSWC Dahlgren : VA	6.094	4.769	Oct 2014	5.278	Oct 2015	2.465	Oct 2016	-		2.465	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment	SS/CPFF	BAE : Not Specified	0.219	0.219	Dec 2014	0.291	Nov 2015	0.505	Dec 2016	-		0.505	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment	SS/CPIF	APL : Not Specified	0.025	0.323	Dec 2014	0.437	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment	C/BA	GDAIS : Not Specified	0.030	0.000	Jan 2015	0.150	Dec 2015	1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
Joint Warhead Fuze Sustainment	WR	CNSW : Not Specified	0.000	0.000		0.200	Nov 2015	0.200	Oct 2016	-		0.200	0.000	0.400	-
Joint Warhead Fuze Sustainment	WR	NCCC : Not Specified	0.000	0.000		0.100	Oct 2015	0.000		-		0.000	0.000	0.100	-
Subtotal			217.121	81.696		84.765		111.857		-		111.857	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	217.121	81.696	84.765	111.857	-	111.857	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>
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Proj 0951	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Joint Warhead Fuze Sustainment Program																												
Assembly Level Testing																												
Performance Assessment of Tested Designs																												
Development Tests																												
Production Engineering																												
General JCIDS Support																												
General Acquisition Planning Support																												

2017DON - 0101221N - 0951

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 0951 / <i>Joint Warhead Fuze Sustainment Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 0951</i>				
Joint Warhead Fuze Sustainment Program: Assembly Level Testing:	1	2015	4	2021
Joint Warhead Fuze Sustainment Program: Performance Assessment of Tested Designs:	1	2015	4	2021
Joint Warhead Fuze Sustainment Program: Development Tests:	1	2015	4	2021
Joint Warhead Fuze Sustainment Program: Production Engineering:	1	2015	4	2021
Joint Warhead Fuze Sustainment Program: General JCIDS Support:	1	2015	4	2021
Joint Warhead Fuze Sustainment Program: General Acquisition Planning Support:	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>				Project (Number/Name) 2228 / <i>Technical Applications Programs</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2228: <i>Technical Applications Programs</i>	633.772	9.697	9.000	22.123	-	22.123	16.744	14.700	14.760	15.084	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Multi-Star Enhanced Prelaunch (MEP) program commenced in FY16. This system leverages the capability of the D5 Life Extension Guidance (Mk6 Mod1) to sight two stars vice one combined with the interface updates to the Fire Control and Navigation. Allowing for in-flight correction, the potential to operate in environments where GPS is denied, and may provide future relief to the strict tolerance requirements of the strategic navigator on the current OHIO class submarines and the OHIO Class Replacement program. The Systems Engineering Modeling and Simulation capability will consist of three elements: Model Based Design, Strategic Weapon System (SWS) Integrated Modeling and Simulation/Common Architecture & Framework, and SWS Enhancement Ground Test. This effort will provide the capability to comprehensively evaluate and test the integrated SWS within representative operational environments, providing unprecedented visibility across the SWS and system performance characterization equivalent to flight testing. This capability will enable trade space analysis to identify technical margin, subsystem interactions, and lifecycle affordability opportunities to include other services and be able to identify the benefits and risks of commonality to the individual programs, requirements and CONOPs modifications that could facilitate commonality, potential common acquisition strategies between the services, and total life cycle cost implications.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Multi-Star Enhanced Prelaunch (MEP)	0.000	9.000	8.757	0.000	8.757
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Define interface specifications between Navigation, Fire Control and Guidance subsystems for executing MEP algorithm Begin early software engineering development					
FY 2017 Base Plans: Continue software engineering development Design Conformance Review Integration Testing Hardware in the Loop Testing Independent Verification and Validation Testing					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 2228 / <i>Technical Applications Programs</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Guidance Demonstration and Shakedown Operation (DASO) Special Test Support Fire Control and Navigation DASO Software Development FY 2017 OCO Plans: N/A					
Title: Missile Component Development Articles:	9.697 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2015 Accomplishments: Congressional add for missile component development. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: System Engineering Modeling and Simulation Articles:	0.000 -	0.000 -	13.366 -	0.000 -	13.366 -
FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Begin to develop model based design integration plan. Begin modeling and simulation gap analysis. Begin assessment on RadHard avionics and electronics technology and affordability. Begin assessment on propellant technologies. Begin assessment on new Post Boost Control and Electro-Mechanical Thrust Vector Control (TVC) systems for improved mission flexibility and affordability. Begin assessment of common serial bus architectures for future flexibility and commonality between the Navy and other services.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 2228 / <i>Technical Applications Programs</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Begin assessment of common Fire Control/Ground architectures and software to support USSTRATCOM targeting requirements. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	9.697	9.000	22.123	0.000	22.123

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

Contracts will continue to be awarded to those sources who were engaged in program and are currently engaged in the production and/or operational support on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

E. Performance Metrics

Not applicable

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 2228 / <i>Technical Applications Programs</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technology Applications LMSS	SS/CPFF	LMSS : CA	160.450	0.000		0.500	Jan 2016	3.822	Oct 2016	-		3.822	Continuing	Continuing	Continuing
Technology Applications NSWC	WR	NSWC : VA	92.504	0.970	Jul 2015	0.750	Jan 2016	0.844	Oct 2016	-		0.844	0.000	95.068	-
Technology Applications DOE	MIPR	DOE : NM	33.717	0.000		0.000		0.000		-		0.000	0.000	33.717	-
Technology Applications ITT	SS/CPFF	ITT : CO	12.194	0.000		0.000		0.000		-		0.000	0.000	12.194	-
Technology Applications CSDL	SS/CPFF	CSDL : MA	313.522	8.727	May 2015	7.500	Jan 2016	17.457	Oct 2016	-		17.457	0.000	347.206	-
Technology Applications AERO	SS/CPFF	AERO : CA	3.068	0.000		0.000		0.000		-		0.000	0.000	3.068	-
Technology Applications VAR	Various	Various : Various	18.317	0.000		0.000		0.000		-		0.000	0.000	18.317	-
Technology Applications GD-AIS	SS/CPFF	GDAIS : MA	0.000	0.000		0.250	Jan 2016	0.000		-		0.000	0.000	0.250	-
Subtotal			633.772	9.697		9.000		22.123		-		22.123	-	-	-
Project Cost Totals			633.772	9.697		9.000		22.123		-		22.123	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 2228 / <i>Technical Applications Programs</i>
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Proj 2228	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Missile Component Development																												
Multi-Star Enhanced Prelaunch (MEP)																												
MEP Subsystem Interface Specifications Developed																												
MEP Early Engineering Software Development																												
MEP Engineering Software Development																												
MEP Subsystem Testing																												
MEP Preliminary System Integration & Test																												
MEP Final Engineering Software Development																												
MEP Final System Integration Test																												
MEP DASO Flight Test Demonstration																												
MEP Post Flight Test Data Analysis																												
System Engineering Modeling and Simulation																												
SWS Integrated Modeling & Simulation/ Common Framework																												
SWS Enhancement Group Test Model-Based Design																												

2017DON - 0101221N - 2228

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 2228 / <i>Technical Applications Programs</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2228				
Multi-Star Enhanced Prelaunch (MEP): MEP Subsystem Interface Specifications Developed:	1	2016	4	2016
Multi-Star Enhanced Prelaunch (MEP): MEP Early Engineering Software Development:	1	2016	4	2016
Multi-Star Enhanced Prelaunch (MEP): MEP Engineering Software Development:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Subsystem Testing:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Preliminary System Integration & Test:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Final Engineering Software Development:	1	2018	4	2021
Multi-Star Enhanced Prelaunch (MEP): MEP Final System Integration Test:	1	2018	4	2021
Multi-Star Enhanced Prelaunch (MEP): MEP DASO Flight Test Demonstration:	1	2018	4	2021
Multi-Star Enhanced Prelaunch (MEP): MEP Post Flight Test Data Analysis:	1	2018	4	2021
System Engineering Modeling and Simulation: SWS Integrated Modeling & Simulation/ Common Framework:	1	2017	4	2021
System Engineering Modeling and Simulation: SWS Enhancement Group Test:	1	2017	4	2021
System Engineering Modeling and Simulation: Model-Based Design:	1	2017	4	2021
Missile Component Development:	1	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>				Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3158: <i>Integrated Nuclear Weapons Security Sys Dev</i>	21.421	2.519	2.639	2.576	-	2.576	2.755	2.799	2.866	2.931	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Special Weapons effort supports the Nuclear Weapons Security program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landside at Naval Submarine Base, Kings Bay or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The CNO has assigned SSP, the FBM program manager, with mission responsibility for the safeguard of FBM nuclear assets. More specifically, the mission includes landside and pier operations as well as transits to and from the dive point, each of which present challenges to personnel as well as existing technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies focusing on land and in transit requirements. Collectively, these efforts will improve countermeasure technologies addressing detection, delay and denial.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Integrated Nuclear Weapons Security Sys Dev	2.519	2.639	2.576	0.000	2.576
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Sensor developed for: Land Water Interface project (LWI), underwater Sonar Track Association Research (STAR), Waterside Detection System (WDS)					
- Developed technologies: for refresh of electronic systems in the Waterfront Restricted Area (WRA), increase detection and tracking capabilities, and to reduce manpower by automating processed and enhancing security technologies.					
- Enhanced the Marine Mammal System (MMS)					
- Continued Multi-Static/Bi-Static Sensor Development: Enhances waterside detection of swimmers/divers by integrating passive hydrophone arrays with current active elements to increase capability of detection without adding any new active elements.					
- Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Continued research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - WDS Upstream Data Fusion: Development of software and hardware to fuse low level sensor data from multiple WDS sensors to increase capability for tracking and classification of current sensors. - NWS Technology Refresh: Development of technologies for refresh of electronic security systems for the Limited Area and Electronic Harbor Security System in the Waterfront Restricted Area (WRA). This includes electronic hardware and algorithms. - Continue Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain. - FOPEN Sensor Transition: OSD(NM) is funding evaluation and demonstration of a variety of FOPEN Sensors. This effort will fund in situ demonstration as well as necessary transition planning and development to facilitate transition of down selected sensors for incorporation into NWS POR. - Continue research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain. - Continue research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial. - Conduct Analysis of Alternatives on WQX-2 follow on Sensor Selection & Transition <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	2.519	2.639	2.576	0.000	2.576

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPN/Various-2: <i>OPN (Nuclear Weapons Security)</i>	170.605	33.253	38.410	-	38.410	28.377	29.991	42.182	34.590	Continuing	Continuing
• OMN/11D2D-3: <i>Fleet Ballistic Missile (Nuclear Weapons Security)</i>	83.319	75.723	77.356	-	77.356	89.990	83.069	84.482	86.162	Continuing	Continuing
• OMN/11D2D-5: <i>Fleet Ballistic Missile (Transit/Escort)</i>	82.207	95.067	109.829	-	109.829	81.890	90.845	92.886	94.835	Continuing	Continuing
• MCN/Various-1: <i>MILCON (CNI) (Nuclear Weapons Security)</i>	20.638	34.177	0.000	-	0.000	0.000	87.871	0.000	0.000	0.000	186.528
• WPN/4217/0101228N: <i>WPN (Gun Mount Mods)</i>	0.000	4.029	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.029
• WPN/4129/0101228N: <i>Small Arms</i>	0.000	0.000	7.007	-	7.007	1.422	0.000	0.000	0.000	0.000	8.429

Remarks

D. Acquisition Strategy

Procurements are being executed through a combination of private contractors (large and small business), government Centers of Excellence (COEs), other government agencies and the Naval Submarine Bases, Kitsap and Kings Bay. Contract awards are based upon "best value" determinations, and where practical will be performance based or include incentive provisions.

E. Performance Metrics

Not applicable

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Nuclear Weapons Security Sys Dev	WR	NFESC : CA	2.347	0.353	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	CNWS : CA	0.404	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	SS/CPFF	JHU APL : MD	3.437	0.183	Nov 2014	0.275	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	SNWS : CA	4.252	0.306	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	NSWC : VA	2.877	0.191	Oct 2014	0.607	Oct 2015	0.680	Oct 2016	-		0.680	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	SS/CPFF	JRC : VA	1.887	0.458	Oct 2014	0.275	Oct 2015	0.400	Oct 2016	-		0.400	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	NUWC : RI	0.893	0.049	Dec 2014	0.636	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	NEDU : FL	0.383	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	SS/CPFF	LMSS : CA	1.001	0.180	Dec 2014	0.846	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	MIPR	DOEI : ID	0.180	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	MIPR	DOE : NM	0.425	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Nuclear Weapons Security Sys Dev	SS/CPFF	ARL : TX	1.432	0.448	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	WR	NUWD : WA	0.530	0.351	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Nuclear Weapons Security Sys Dev	C/BA	NRL : DC	0.628	0.000		0.000		0.560	Oct 2016	-		0.560	0.000	1.188	-
Integrated Nuclear Weapons Security Sys Dev	C/BA	DRAPER : DC	0.355	0.000		0.000		0.000		-		0.000	0.000	0.355	-
Integrated Nuclear Weapons Security Sys Dev	C/BA	SPAWAR : DC	0.390	0.000		0.000		0.000		-		0.000	0.000	0.390	-
Integrated Nuclear Weapons Security Sys Dev	C/BA	SPA : VA	0.000	0.000		0.000		0.475	Oct 2016	-		0.475	0.000	0.475	-
Integrated Nuclear Weapons Security Sys Dev Need Item Text	MIPR	ATC : TX	0.000	0.000		0.000		0.461	Oct 2016	-		0.461	0.000	0.461	-
Subtotal			21.421	2.519		2.639		2.576		-		2.576	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.421	2.519	2.639	2.576	-	2.576	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>
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Proj 3158	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
RDTE required to study NWS risks																												
NWS Development of advanced technologies/sensors																												
NWS Multi-Static/Bi-Static Sensor Development																												
NWS Enhances to the Marine Mammal System (MMS)																												
NWS Wide Area/Extended Detection																												
NWS WDS Upstream Data Fusion																												
NWS Technology Refresh																												

2017DON - 0101221N - 3158

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / <i>Strategic Sub & Wpns Sys Supt</i>	Project (Number/Name) 3158 / <i>Integrated Nuclear Weapons Security Sys Dev</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3158				
RDTE required to study NWS risks: NWS Development of advanced technologies/sensors:	1	2015	4	2015
RDTE required to study NWS risks: NWS Multi-Static/Bi-Static Sensor Development:	1	2015	4	2015
RDTE required to study NWS risks: NWS Enhances to the Marine Mammal System (MMS):	1	2015	4	2015
RDTE required to study NWS risks: NWS Wide Area/Extended Detection:	1	2015	4	2021
RDTE required to study NWS risks: NWS WDS Upstream Data Fusion:	1	2016	4	2016
RDTE required to study NWS risks: NWS Technology Refresh:	1	2016	4	2016
RDTE required to study NWS risks: AoA WQX-2 Sensor Selection & Transition: Schedule Detail	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0101224N / <i>SSBN Security Tech Program</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	29.146	46.481	33.845	-	33.845	36.442	37.342	38.145	38.930	Continuing	Continuing
0092: <i>SSBN Security</i>	0.000	29.146	46.481	33.845	-	33.845	36.442	37.342	38.145	38.930	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET and are submitted annually to Congress in the classified budget justification books.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	30.039	46.506	35.797	-	35.797
Current President's Budget	29.146	46.481	33.845	-	33.845
Total Adjustments	-0.893	-0.025	-1.952	-	-1.952
• Congressional General Reductions	-	-0.025			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.893	0.000			
• Rate/Misc Adjustments	0.000	0.000	-1.952	-	-1.952

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	33.705	4.366	4.700	9.329	-	9.329	12.100	9.412	9.516	13.678	Continuing	Continuing
1265: <i>Sub Defensive Warfare</i>	33.705	4.366	3.900	9.329	-	9.329	12.100	9.412	9.516	13.678	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	0.000	0.800	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.800

A. Mission Description and Budget Item Justification

The Submarine Acoustic Warfare Development program element is comprised of the Submarine Defensive Warfare Program and a Congressional ADD for Compact Rapid Attack Weapon Program (CRAW). The objective is to maintain and improve the survivability of all U.S. submarine classes in response to torpedo attack. Efforts include on the Next Generation Countermeasure (NGCM) program, the Torpedo Defense Working Group (TDWG), Technical Direction Agent (TDA) and In-Service Engineering Agent (ISEA) hardware and software development support for Acoustic Devices Countermeasures (ADCs), Countermeasures Set, Acoustic (CSA) systems and Acoustic Augmentation Support Systems (AASS) in the Acoustic Augmentation Support Program (AASP), including component level technical insertion. Also, this program transitions the research and development of new technologies and capabilities developed under the Future Naval Capabilities (FNC), Small Business and Innovative Research (SBIR), and other Research, Development, Test & Evaluation (RDT&E) initiatives.

Project 9999/Congressional Add for Compact Rapid Attack Weapon Program (CRAW) will identify the program requirements for a CRAW Program, to determine and justify a new start program based on employing the 6" diameter Countermeasure Anti-Torpedo (CAT) in the submarine force.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.509	3.900	5.969	-	5.969
Current President's Budget	4.366	4.700	9.329	-	9.329
Total Adjustments	-0.143	0.800	3.360	-	3.360
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	0.800			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.143	0.000			
• Program Adjustments	0.000	0.000	3.491	-	3.491
• Rate/Misc Adjustments	0.000	0.000	-0.131	-	-0.131

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

FY 2015	FY 2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Congressional Add: *Combat Rapid Attach Weapon Program*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	0.000	0.800
	0.000	0.800
	0.000	0.800

Change Summary Explanation

Schedule: After restructuring the NGCM program in FY 15, the schedule reflects an accelerated IOC of FY23, from the FY27 date. The developmental efforts will include torpedo threat analysis and integration, Concept of Operations (CONOPS) for fleet tactics evaluation, Test and Evaluation Master Plan (TEMP) completion, Tactical Decision Aid (TacDA) development, and sabot development for External Countermeasure Launcher (ECL) capability. A single, new development contract resulting in fully functional EDM device variants will be awarded in FY 17. The developmental contract will consist of a 4 year development effort and the 5th year will provide Low-Rate Initial Production (LRIP) units for accomplishing operational testing (OT) in FY22-23. Milestone C is notionally planned for FY21.

Financial:

Decrease in Submarine Acoustic War Dev RD TEN by \$.227M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

FY 2017 funding request was reduced by \$0.282 million to account for the availability of prior years execution balance.

FY 2016 \$0.800 million was added for the Compact Rapid Attack Weapon Program.

FY 2017 base budget increase of \$3.360M to stabilize the Next Generation Countermeasure (NGCM) program and associated SAWS research and development efforts.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1265: <i>Sub Defensive Warfare</i>	33.705	4.366	3.900	9.329	-	9.329	12.100	9.412	9.516	13.678	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The increase in FY2017 funding is for the NGCM development contract that will be awarded in FY 17, through a full and open competition, Cost Plus Fixed Fee (CPFF) contract.

This project supports the Submarine Acoustic Warfare System (SAWS) program to maintain and improve the survivability of all U.S. submarine classes in response to torpedo attack. This program funds:

1. The Next Generation Countermeasure (NGCM) program, (ACAT III) currently in Engineering and Manufacturing Development (E&MD). The key new capabilities NGCM brings are: adaptive countermeasure (ACM) technology with full duplex capability and mobility packaged in a three inch diameter body. Milestone C is nominally 2023.
2. The Torpedo Defense Working Group (TDWG). A working group comprised of fleet, resource sponsor, and acquisition community representatives to assess countermeasure effectiveness against fleet threats, both known and projected, with associated studies, models, and simulations.
3. The Technical Direction Agent (TDA) and In-Service Engineering Agent (ISEA) hardware and software development support for Acoustic Devices Countermeasure (ADC) (ADC MK 2, 3 & 4, NAE Beacon) as well as Countermeasures Set, Acoustic (CSA) MK 2, MK 3, MK 4 systems and Acoustic Augmentation Support Systems (AASS) in the Acoustic Augmentation Support Program (AASP), including component level technical insertion.
4. Research and development of new technologies and capabilities developed under the Future Naval Capabilities (FNC), Small Business and Innovative Research (SBIR), and other Research, Development, Test & Evaluation (RDT&E) initiatives. New and emerging hardware and software are evaluated in representative acoustic environments, against projected threats through both digital and hardware-in-the-loop simulations, to determine their effectiveness and impact on improving submarine survivability. The technology is then incorporated into the appropriate countermeasure.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Sub Acoustic Warfare	4.366	3.900	9.329	0.000	9.329
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Prepare for the NGCM developmental contract solicitation.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Start NGCM TEMP. - Start Modeling and Simulation (M&S) development and assessment for known torpedo threats. - Continue NGCM TEMP, SAMP, PLCCE, and acquisition documentation. - Begin development of Concept of Operations and TacDA for fleet tactics. - Begin sabot development for external launch. - Conduct assessment of threat by TDWG and WAF with updated vulnerability assessment. - Conduct phase 2.5 assessment of SBIR development of AASP HLF-IF Transducer. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue NGCM TEMP - Continue preparing for the NGCM developmental contract. - Continue M&S for known and projected torpedo threats - Continue development of required program documentation - Continue development of CONOPS and TacDA for fleet tactics - Continue sabot development for external launch - Conduct review TDWG and WAF with updated reliability assessments. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Complete NGCM TEMP - Award NGCM development contract - Continue M&S for known and projected torpedo threats - Continue development of required program documentation - Continue development of CONOPS and TacDA for fleet tactics - Continue sabot development for external launch - Continue assessment of threat by TDWG and WAF with updated vulnerability assessments <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	4.366	3.900	9.329	0.000	9.329

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/221000/221005: <i>Submarine Acoustic Warfare</i>	22.721	19.718	21.291	-	21.291	22.263	24.076	26.212	26.722	Continuing	Continuing

Remarks

D. Acquisition Strategy

Submarine Acoustic Warfare System (SAWS) develops Undersea Defensive Warfare technologies to improve the survivability of all U.S. Submarine classes. The integration of technology into the Next Generation Countermeasure (NGCM) and the NGCM-capable CSA MK 3/4 system will continue through FY23. The NGCM development contract will be awarded in FY 17, through a full and open competition, Cost Plus Fixed Fee (CPFF) contract. Engineering Development Model (EDM) variants, Technical Data Packages (TDP), and LRIP units for accomplishing Operational Testing, will be delivered to the Navy under this contract. NGCM contractor subsystem testing will occur in FY 18 through FY 20 and joint contractor/Navy Developmental Testing (DT) will be in FY 19 through FY 21, with Navy Operational Testing (OT) in FY 22 through FY 23. Milestone C is nominally in FY 21. Initial Operational Capability (IOC) is nominally FY 23 for both the Internal Countermeasure Launcher (ICL) and ECL capability of NGCM. The production contract solicitation will be issued in FY22, after successfully completing OT and Full Rate Production decision review (FRP DR) approval, for an award in FY23, as a full and open competition, build to print approach with either a single producer or leader/follower production contract.

E. Performance Metrics

Progress Reviews
 Execution Reporting and Reviews
 Milestone Reviews

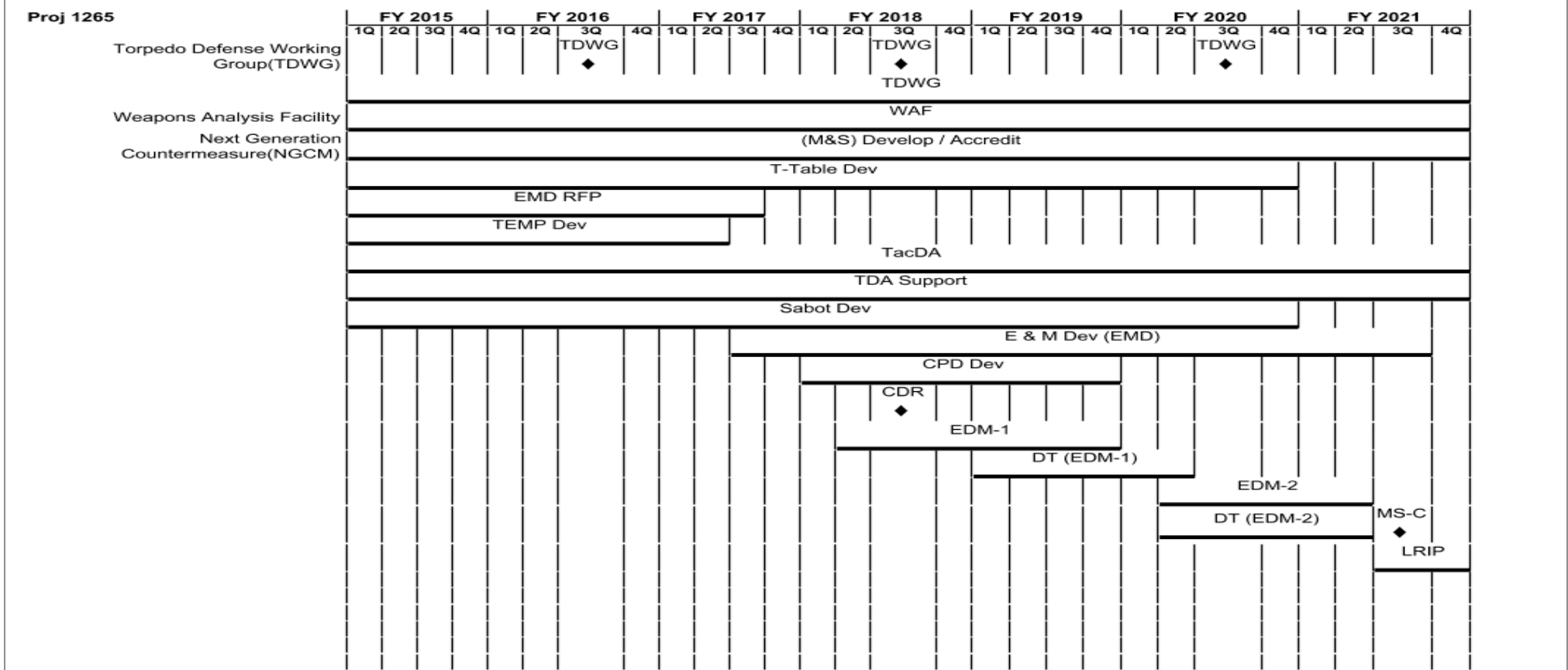
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0101226N / Submarine Acoustic War Dev				Project (Number/Name) 1265 / Sub Defensive Warfare							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WAF ANALYSIS TDWG	WR	NUWC : NEWPORT, RI	11.392	0.175	Dec 2014	0.275	Dec 2015	0.275	Dec 2016	-		0.275	Continuing	Continuing	Continuing
NGCM SYSYTEM ENGINEERING	WR	NUWC : NEWPORT, RI	8.374	0.966	Dec 2014	0.600	Dec 2015	0.474	Dec 2016	-		0.474	Continuing	Continuing	Continuing
NGCM New Development	C/CPFF	TBD : TBD	0.000	0.000		0.000		5.000	Aug 2017	-		5.000	Continuing	Continuing	Continuing
CSA MK5 SYSTEM ENGINEERING	WR	NUWC : KEYPORT, WA	1.031	0.464	Mar 2015	0.500	Dec 2015	0.400	Dec 2016	-		0.400	Continuing	Continuing	Continuing
Modeling And Simulation	WR	NUWC : NEWPORT, RI	0.000	1.437	Mar 2015	1.225	Dec 2015	1.200	Dec 2016	-		1.200	Continuing	Continuing	Continuing
Tactical Decision Aid	WR	NUWC : NEWPORT, RI	0.000	0.000		0.600	Dec 2015	1.100	Dec 2016	-		1.100	Continuing	Continuing	Continuing
Sabot Development	WR	NUWC : NEWPORT, RI	0.000	0.479	Mar 2015	0.400	Dec 2015	0.400	Dec 2016	-		0.400	Continuing	Continuing	Continuing
NGCM DEVELOPMENT 1	C/CPAF	Argon ST : Fairfax, VA	5.757	0.000		0.000		0.000		-		0.000	0.000	5.757	-
NGCM DEVELOPMENT 2	C/CPAF	Ultra : Braintree, MA	5.484	0.000		0.000		0.000		-		0.000	0.000	5.484	-
AASP SBIR Phase 2.5	SS/CPFF	HAI : Cohasset, MA	0.000	0.435	Jan 2015	0.000		0.000		-		0.000	0.000	0.435	-
Subtotal			32.038	3.956		3.600		8.849		-		8.849	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TRAVEL	WR	NAVSEA : Washington, DC	0.546	0.026	Oct 2014	0.040	Oct 2015	0.080	Oct 2016	-		0.080	Continuing	Continuing	Continuing
PROGRAM MANAGEMENT SUPPORT	C/CPAF	TECH MARINE : Washington, DC	0.900	0.000		0.000		0.000		-		0.000	0.000	0.900	-
PROGRAM MANAGEMENT SUPPORT	C/CPAF	BOOZ ALLEN : Washington, DC	0.221	0.384	Dec 2014	0.260	Dec 2015	0.400	Oct 2016	-		0.400	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>
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2017PB - 0101226N - 1265

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1265				
Torpedo Defense Working Group(TDWG): FY16 TDWG	3	2016	3	2016
Torpedo Defense Working Group(TDWG): FY18 TDWG	3	2018	3	2018
Torpedo Defense Working Group(TDWG): FY20 TDWG	3	2020	3	2020
Torpedo Defense Working Group(TDWG): TDWG Modeling & Simulation (M&S)	1	2015	4	2021
Weapons Analysis Facility: COUNTERMEASURE (CM) EFFECTIVENESS/WEAPON ANALYSIS FACILITY (WAF) VULNERABILITY	1	2015	4	2021
Next Generation Countermeasure(NGCM): NGCM (M&S) Develop / Accredit	1	2015	4	2021
Next Generation Countermeasure(NGCM): NGCM T-Table Development	1	2015	4	2020
Next Generation Countermeasure(NGCM): EMD RFP	1	2015	3	2017
Next Generation Countermeasure(NGCM): NGCM TEMP Development	1	2015	2	2017
Next Generation Countermeasure(NGCM): Tactical Decision Aid (TacDA)	1	2015	4	2021
Next Generation Countermeasure(NGCM): Technical Direction Agent (TDA) Support	1	2015	4	2021
Next Generation Countermeasure(NGCM): Sabot Development	1	2015	4	2020
Next Generation Countermeasure(NGCM): Engineering & Manufacturing Development (EMD)	3	2017	3	2021
Next Generation Countermeasure(NGCM): NGCM CPD Development	1	2018	4	2019
Next Generation Countermeasure(NGCM): NGCM Critical Design Review (CDR)	3	2018	3	2018
Next Generation Countermeasure(NGCM): EDM-1	2	2018	4	2019
Next Generation Countermeasure(NGCM): DT (EDM-1)	1	2019	2	2020
Next Generation Countermeasure(NGCM): EDM-2	2	2020	2	2021
Next Generation Countermeasure(NGCM): DT (EDM-2)	2	2020	2	2021
Next Generation Countermeasure(NGCM): MS-C	3	2021	3	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 1265 / <i>Sub Defensive Warfare</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Countermeasure(NGCM): LRIP	3	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	0.000	0.800	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.800
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 9999/Congressional Add for "Compact Rapid Attack Weapon Program" will identify the program requirements to determine and justify a new start program by employing the 6" diameter Countermeasure Anti-Torpedo (CAT) in the submarine force.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016
Congressional Add: Combat Rapid Attach Weapon Program	0.000	0.800
FY 2015 Accomplishments: N/A		
FY 2016 Plans: This add will support an Analysis of Alternatives conducted to evaluate the technological readiness and engineering challenges associated with incorporating the CAT onto submarines as a defensive Anti-Torpedo Torpedo (ATT) to counter Non-Traditional Threat Torpedoes (NTTT). This study effort will involve subject matter experts from the Navy (primarily NUWC, Newport, to include torpedo, fire control, launcher, and systems integration expertise) and 6" CAT developers (at Applied Research Laboratory/Penn State University (ARL/PSU), as well as other warfare expertise such as from the Naval War College.		
Congressional Adds Subtotals	0.000	0.800

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

To be determined.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRAW Development	WR	NUWC : Newport, RI	0.000	0.000		0.300	Jul 2016	0.000		-		0.000	0.000	0.300	-
CRAW Development	WR	Naval War College : Newport, RI	0.000	0.000		0.050	Sep 2016	0.000		-		0.000	0.000	0.050	-
CRAW Development	C/CPFF	ARL/Penn State : State College, PA	0.000	0.000		0.150	Sep 2016	0.000		-		0.000	0.000	0.150	-
CRAW Development	WR	NUWC : Keyport, WA	0.000	0.000		0.100	Sep 2016	0.000		-		0.000	0.000	0.100	-
Subtotal			0.000	0.000		0.600		0.000		-		0.000	0.000	0.600	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRAW Development	TBD	TBD : Not Specified	0.000	0.000		0.200	Sep 2016	0.000		-		0.000	0.000	0.200	-
Subtotal			0.000	0.000		0.200		0.000		-		0.000	0.000	0.200	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	0.800	0.000	-	0.000	0.000	0.800	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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Proj 9999	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
CRAW Development							CRAW Requirements Study																									
							Interim Report 1 ◆			Interim Report 2 ◆																						

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101226N / <i>Submarine Acoustic War Dev</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
CRAW Development: Requirements Study	3	2016	4	2017
CRAW Development: Interim Report 1	4	2016	4	2016
CRAW Development: Interim Report 2	2	2017	2	2017
CRAW Development: Final Report	4	2017	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101402N / <i>Navy Strategic Comms</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	441.689	13.536	16.558	17.218	-	17.218	16.020	18.252	18.289	18.007	Continuing	Continuing
1083: <i>Shore To Ship Com System</i>	171.179	12.955	15.761	16.235	-	16.235	14.918	17.199	17.225	17.175	Continuing	Continuing
3002: <i>Navy Strategic Comm Project</i>	270.510	0.581	0.797	0.983	-	0.983	1.102	1.053	1.064	0.832	Continuing	Continuing

A. Mission Description and Budget Item Justification

The FY 2017 funding request was reduced by \$0.412M to account for the availability of prior year execution balances.

The Shore to Ship Communication System develops communication elements which support the Navy's Nuclear Command, Control, and Communications (NC3) requirements, providing various communications infrastructure and elements from the regional Submarine Operating Authority (SUBOPAETH) to the deployed strategic platform (fleet ballistic missile submarines). This portfolio of programs designs and develops shore-to-ship transmit and receive communications systems (i.e., Fixed Submarine Broadcast System (FSBS) and SUBOPAETH Command, Control, and Communications (C3) Systems) in support of communications with all submarine types (i.e., SSN, SSGN, and SSBN).

Realignment of funds from OPN to RDTEEN for Nuclear Command, Control & Communications Nova Technical Change (NC3 NTC) to complete Low Rate Initial Production (LRIP) and operational test and evaluation of the Nova software replacement with the Navy NC3 Emergency Action Message (EAM) Enhanced Technology (NEET) Software. NEET is being developed under an Office of Naval Research (ONR) Technology Insertion Program for Savings (TIPS) initiative to mitigate supply chain risk and comply with enhanced IA standards identified by National Security Agency (NSA) and Task Force Urgent Sentinel (TFUS).

The Navy Strategic Communications Project responds to emerging E-6B Airborne Strategic Command, Control and Communications capability requirements by performing technical evaluations, modeling and simulation, investigative ground and flight testing, enhanced software modifications and development of configuration modifications. The E-6B is a manned airborne platform that provides survivable, enduring and reliable Command, Control and Communications capability in support of the President, Secretary of Defense and United States strategic and non-strategic forces. These efforts support follow-on aircraft modification procurements necessary to ensure interoperability in information-assured network-centric strategic environments.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101402N / <i>Navy Strategic Comms</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	13.672	16.569	16.502	-	16.502
Current President's Budget	13.536	16.558	17.218	-	17.218
Total Adjustments	-0.136	-0.011	0.716	-	0.716
• Congressional General Reductions	-	-0.011			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.095	0.000			
• SBIR/STTR Transfer	-0.232	0.000			
• Program Adjustments	0.000	0.000	1.450	-	1.450
• Rate/Misc Adjustments	0.001	0.000	-0.734	-	-0.734

Change Summary Explanation

Schedule Changes for Project 3002 - Upon completion of Studies & Analysis in FY16, Technical & Design Analysis and System Integration Lab Testing & Reporting will commence in FY 17 on advance technology development.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms				Project (Number/Name) 1083 / Shore To Ship Com System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1083: Shore To Ship Com System	171.179	12.955	15.761	16.235	-	16.235	14.918	17.199	17.225	17.175	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Shore to Ship Communications System develops communication elements which provide Nuclear Command, Control and Communications (NC3) between the President of the United States (POTUS) and Ballistic Missile Submarines (SSBN). This portfolio of programs provides design and development for shore-to-ship transmit and receive communications systems.

The Low Band Universal Communications System (LBUCS) is a modernization program that will upgrade the low-power transmit and receive subsystems of the Fixed Submarine Broadcast System (FSBS) which are approaching their operational end of life. LBUCS will ensure operational capability of the Very Low Frequency (VLF) architecture by providing system life extension and flexibility of submarine broadcast reception to submarines operating in a stealth posture. The flexibility includes enhanced throughput and anti-jam capability, ensuring more operational traffic is delivered to submarines without risking mast exposure. LBUCS will also deliver a simplified shore architecture, maintaining capability while maximizing use of shore nodes. Finally, LBUCS provides an upgrade to the VLF receive system, with all interoperable waveforms, to ensure continued compliance with Nuclear Command and Control System Technical Performance Criteria (NTPC).

The Strategic Communications Assessment Program/Continued Evaluation Program (SCAP/CEP) provides continuous assessment of the effectiveness of the Navy NC3 network and analysis of system performance in various mission locations.

The High Voltage Improvement Program (HVIP) develops technologies to improve the high voltage insulators, bushings, antenna and transmitter components used in the high-power Low Frequency/Very Low Frequency (LF/VLF) transmit systems of the Fixed Submarine Broadcast System (FSBS).

The Broadcast Control Authority (BCA) project researches and models future solutions to address network/system interoperability and information assurance/cybersecurity challenges of the four regional Submarine Operating Authority (SUBOPAETH) BCA communication and network operations centers.

Nuclear Command, Control and Communications Nova Technical Change (NC3 NTC) is the Shore to Ship Communication System that develops communication elements which support the Navy's NC3 requirements, providing various communications infrastructure and elements from the regional Submarine Operating Authority (SUBOPAETH) to the deployed strategic platform (fleet ballistic missile submarines). This portfolio of programs designs and develops shore-to-ship transmit and receive communications systems (i.e., Fixed Submarine Broadcast System (FSBS) and SUBOPAETH Command, Control, and Communications (C3) Systems) in support of communications with all submarine types (i.e., SSN, SSGN, and SSBN).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Low Band Universal Communication System (LBUCS)	8.088	8.708	7.481	0.000	7.481

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Articles:	-	-	-	-	-
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Completed Phase I SWAN IA upgrade development. -Completed LBUCS Receive Critical Design Review (CDR). -Continued LBUCS Receive development including Engineering Development Model (EDM). -Continued statutory and regulatory acquisition documentation in preparation for LBUCS Receive deployment. -Continued development of a new Very Low Frequency (VLF) Mode which will be incorporated into the LBUCS Receive development effort. -Continued LBUCS Transmit development. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Commence and complete LBUCS Transmit developmental testing with EDM and completed LRIP units (DT-C1) & (DT-C2). -Complete development of a new Very Low Frequency (VLF) Mode which will be incorporated into the LBUCS Receive development effort. -Complete development of LBUCS Receive Engineering Development Model (EDM). -Complete statutory and regulatory acquisition documentation in preparation for LBUCS Receive deployment. -Continue LBUCS Transmit Development. -Continue LBUCS Receive development. -Commence and complete LBUCS Receive DT. -Commence and complete LBUCS Receive EDM program review. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Commence and complete LBUCS Transmit Testing with completed LRIP units (IOT&E), with Commander, Operational Test and Evaluation (COMOPTEVFOR). -Complete LBUCS Transmit development -Complete LBUCS Receive development. -Commence and complete LBUCS testing on Receive EDM. -Commence pre-acquisition efforts for a comprehensive program which will include all of the low power submarine shore C3 systems. -Commence establishment of Submarine Operating Authority (SUBOPAETH) Integrated Test Facility (SITF) and interconnectivity between other labs for end-to-end testing of FSBS Low Power and supporting C3 systems. -Commence the development of the next generation VLF receiver. <p>FY 2017 OCO Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Strategic Communications Assessment Program (SCAP)/Continuing Evaluation Program (CEP)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Continued mission analysis of Ballistic Missile Submarine (SSBN) Emergency Action Message (EAM) reception for SSBN patrols. -Continued development of automated data collection and analysis tools to reduce latency time between missions and results availability. -Continued reports on performance, adherence to delivery time requirements and shortfalls. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Complete development of automated data collection and analysis tools to reduce latency time between missions and results availability. -Continue reports on performance, adherence to delivery time requirements and shortfalls. -Continue mission analysis of SSBN EAM reception for SSBN patrols. -Commence mission-based analysis for cyber risk on Navy Nuclear Command, Control and Communications (NC3) systems. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Continue reports on performance, adherence to delivery time requirements and shortfalls. -Continue mission analysis of SSBN EAM reception for SSBN patrols. -Continue mission-based analysis for cyber risk on Navy Nuclear Command, Control and Communications (NC3) systems. <p>FY 2017 OCO Plans:</p> <p>N/A</p>	3.381	4.648	4.687	0.000	4.687
<p>Title: High Voltage Improvement Program (HVIP)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Completed examination of innovative lighting methods for high voltage Low Frequency/Very Low Frequency (LF/VLF) towers. -Continued analysis of sulfur hexafluoride (SF6) breakdown in high voltage fields. 	1.114	1.077	1.366	0.000	1.366

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Commenced analysis of High Voltage Test Facility (HVTF) improvement to reduce sparking and increase operational voltage output.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Complete analysis of HVTF improvement to reduce sparking and increase operational voltage output. -Continue analysis of SF6 breakdown in high voltage fields. -Commence analysis of LF/VLF Tower environmental degradation life span. -Commence testing of operational scale tuning reactor. -Commence development of Base Arc Gap for Umbrella Top Loaded Monopole (UTLM) towers. -Commence and complete assessment of tower light control box design in order to determine the best way forward on lighting control panels. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Complete analysis of SF6 breakdown in high voltage fields. -Continue development of Base Arc Gap for UTLM towers. -Continue testing of operational scale tuning reactor. -Continue analysis of LF/VLF Tower environmental degradation life span. -Commence Partial Discharge Detection (PDD) study of the characterization of defects leading to partial discharge on solid dielectrics at LF/VLF. -Commence Fixed Submarine Broadcast System (FSBS) materials degradation analysis. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Nuclear Command & Control Nova Tech Change (NC3 NTC)</p> <p align="right">Articles:</p>	0.000 -	0.000 -	1.200 -	0.000 -	1.200 -
<p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Commence system hardware and software development, integrate network monitoring and cybersecurity interfaces, conduct market research, and procure evaluation prototype equipment. -Commence lab infrastructure support and deliver initial system level design documentation. -Commence developer integration, software functional assessment, and functional integration testing. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Commence engineering management oversight of hardware and software development and evaluation testing. FY 2017 OCO Plans: N/A					
Title: Broadcast Control Authority (BCA) FY 2015 Accomplishments: -Completed development of Submarine Operating Authority (SUBOPAETH) communications tools including: File Repository, OpSked Editor, SubNote Editor, and WebOTAM. -Continued systems and security engineering support for Information Assurance (IA)/Cybersecurity improvements. FY 2016 Plans: -Continue systems and security engineering support for IA/Cybersecurity improvements. -Commence research and Model-Based Systems Engineering (MBSE) efforts to support the development and alignment of Computer Network Defense (CND) and Network Operations (NETOPS) monitoring initiatives within PEO C4I and other DoD organizations. FY 2017 Base Plans: -Continue systems and security engineering support for IA/Cybersecurity improvements. -Continue research and Model-Based Systems Engineering (MBSE) efforts to support the development and alignment of Computer Network Defense (CND) and Network Operations (NETOPS) monitoring initiatives within PEO C4I and other DoD organizations. FY 2017 OCO Plans: N/A	0.372	1.328	1.501	0.000	1.501
Articles:	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	12.955	15.761	16.235	0.000	16.235

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/3107: Submarine Broadcast	11.057	16.021	34.151	-	34.151	38.132	33.164	31.903	32.736	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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D. Acquisition Strategy

Low Band Universal Communications System (LBUCS): LBUCS is the modernization program that will upgrade the low power Transmit and Receive subsystems of the Fixed Submarine Broadcast System which are approaching their operational end of life. The testing of LBUCS completes in FY17.

E. Performance Metrics

LBUCS FY17: Complete Full Fielding Decisions and Operational Testing.

Strategic Communications Assessment Program (SCAP)/Continuing Evaluation Program (CEP) FY17: Delivery of Submersible Ballistic Nuclear Submarine (SSBN) patrol reports.

High Voltage Improvement (HVIP) Program FY17: Complete analysis of sulfur hexafluoride (SF6) breakdown in high voltage fields.

Broadcast Control Authority (BCA) FY17: Continue research and Model-Based Systems Engineering (MBSE) efforts to support the development and alignment of Computer Network Defense (CND) and Network Operations (NETOPS) monitoring initiatives within PEO C4I and other DoD organizations.

Nuclear Command, Control and Communications Nova Technical Change (NC3 NTC) FY17: Complete development and engineering efforts for the transition of Navy NC3 Emergency Action Message (EAM) Enhanced Technology (NEET) into the program of record.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	WR	SSC PAC : San Diego, CA	9.569	0.158	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Software Development	WR	SSC PAC : San Diego, CA	12.793	0.163	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Systems Engineering	WR	SSC LANT : Charleston, SC	9.123	0.000		0.854	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Primary Hardware Development	WR	SSC LANT : Charleston, SC	0.000	0.000		0.356	Nov 2015	0.953	Nov 2016	-		0.953	Continuing	Continuing	Continuing
LBUCS: Systems Engineering	WR	SSC PAC : San Diego, CA	1.430	0.430	Nov 2014	0.839	Nov 2015	1.646	Nov 2016	-		1.646	Continuing	Continuing	Continuing
LBUCS: Software Development	WR	SSC PAC : San Diego, CA	4.024	0.532	Nov 2014	0.555	Nov 2015	0.713	Nov 2016	-		0.713	Continuing	Continuing	Continuing
LBUCS: Software Development (DC)	C/IDIQ	SSC PAC : San Diego, CA	0.000	0.923	Nov 2014	0.942	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
NC3 NTC - Software Development	TBD	SSC PAC : San Diego	0.000	0.000		0.000		0.700	Nov 2016	-		0.700	0.000	0.700	-
Product Development Prior Years	Various	Various : Various	66.297	0.000		0.000		0.000		-		0.000	0.000	66.297	66.297
Subtotal			103.236	2.206		3.546		4.012		-		4.012	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Acquisition/Program Development	WR	SSC PAC : San Diego, CA	2.846	0.354	Nov 2014	0.204	Nov 2015	0.254	Nov 2016	-		0.254	Continuing	Continuing	Continuing
LBUCS: Acquisition/Program Development	TBD	TBD : TBD	0.000	0.000		0.000		0.240	Nov 2016	-		0.240	0.000	0.240	-
LBUCS: Information Assurance	C/CPFF	Merdan Group : San Diego, CA	1.183	0.123	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Security Engineering	C/CPFF	TBD : TBD	0.000	0.000		0.127	Jan 2016	0.000		-		0.000	0.000	0.127	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LBUCS: Information Assurance	WR	SSC PAC : San Diego, CA	0.908	0.425	Nov 2014	0.234	Nov 2015	0.124	Nov 2016	-		0.124	Continuing	Continuing	Continuing
LBUCS: Acquisition/Program Development	C/CPFF	CSA : San Diego, CA	2.877	0.679	Nov 2014	0.690	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Systems Engineering	C/CPFF	FSI : San Diego, CA	1.201	0.329	Nov 2014	0.334	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Systems Engineering	TBD	TBD : TBD	0.000	0.000		0.000		0.130	Nov 2016	-		0.130	0.000	0.130	-
Shore to Ship: Broadcast Control Authority	C/CPFF	FSI : San Diego, CA	0.302	0.378	Nov 2014	1.328	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Logistics Support	C/CPFF	CSA : San Diego, CA	0.419	0.603	Nov 2014	0.607	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
LBUCS: Cost Estimating	C/CPFF	TASC : San Diego, CA	0.165	0.165	Nov 2014	0.216	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Shore to Ship: High Voltage Improvement Program (HVIP) Studies and Design	WR	SSC PAC : San Diego, CA	2.853	1.114	Nov 2014	1.077	Nov 2015	1.366	Nov 2016	-		1.366	Continuing	Continuing	Continuing
Shore to Ship: Broadcast Control Authority	TBD	TBD : TBD	0.000	0.000		0.000		1.501	Nov 2016	-		1.501	0.000	1.501	-
NC3 NTC - Technical Design Documentation	TBD	SSC PAC : San Diego	0.000	0.000		0.000		0.150	Nov 2016	-		0.150	0.000	0.150	-
Support Prior Years	Various	Various : Various	5.592	0.000		0.000		0.000		-		0.000	0.000	5.592	5.592
Subtotal			18.346	4.170		4.817		3.765		-		3.765	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SCAP/CEP: Strategic OP Systems Performance Evaluation	C/CPFF	APL/JHU : Baltimore, MD	33.784	3.439	Jan 2015	4.648	Jan 2016	4.687	Jan 2017	-		4.687	Continuing	Continuing	Continuing
LBUCS: System Testing	WR	COTF : Norfolk, VA	1.144	0.520	Nov 2014	0.525	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LBUCS: System Testing	WR	SSC PAC : San Diego, CA	1.920	1.385	Nov 2014	1.247	Nov 2015	1.174	Nov 2016	-		1.174	Continuing	Continuing	Continuing
LBUCS: System Testing	WR	JITC : Fort Huachuca, AZ	0.000	0.203	Nov 2014	0.207	Nov 2015	0.225	Nov 2016	-		0.225	Continuing	Continuing	Continuing
LBUCS: Hardware Support for Testing	WR	SSC LANT : Charleston, SC	0.000	0.054	Nov 2014	0.058	Nov 2015	1.263	Nov 2016	-		1.263	Continuing	Continuing	Continuing
NC3 NTC - System Testing	TBD	SSC PAC : San Diego	0.000	0.000		0.000		0.290	Nov 2016	-		0.290	0.000	0.290	-
Subtotal			36.848	5.601		6.685		7.639		-		7.639	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LBUCS: Program Management	WR	SSC PAC : San Diego, CA	8.728	0.653	Nov 2014	0.386	Nov 2015	0.425	Nov 2016	-		0.425	Continuing	Continuing	Continuing
Contractor Engineering Support	MIPR	MITRE : San Diego, CA	3.605	0.325	Nov 2014	0.327	Nov 2015	0.334	Nov 2016	-		0.334	Continuing	Continuing	Continuing
LBUCS: Travel	WR	SSC PAC : San Diego, CA	0.416	0.000		0.000		0.000		-		0.000	0.000	0.416	-
NC3 NTC - Program Management	TBD	SSC PAC : San Diego	0.000	0.000		0.000		0.060	Nov 2016	-		0.060	0.000	0.060	-
Subtotal			12.749	0.978		0.713		0.819		-		0.819	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		171.179	12.955	15.761	16.235	16.235	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones Low Band Universal Communications System (LBUCS) <i>Transmit</i>				ADM (FY16 Hardware Procurement)		ADM (FY17-18 H/W Procurements)		ADM (FY17-18 H/W Procurements)		Full Fielding Decision																		
Test & Evaluation				Tech Eval (DT-C1)		Integrated Test (DT-C2)		Integrated Test (DT-C2)		OTRR																		
Equipment Procurement	LRIP Procurement	LRIP Procurement			FY16 Procurement	FY16 Procurement			FY17 Procurement	FY17 Procurement					FY18 Procurement	FY18 Procurement												
Equipment Installation		Installation LRIP	Installation LRIP	Installation LRIP	Installation LRIP	Installation LRIP			Installation	Installation	Installation	Installation			Installation	Installation												

Note 1: IOC is achieved following EAM testing in IOT&E.
 Note 2: The ADMs provide hardware acquisition authority by Milestone Decision Authority prior to the IOT&E report.
 Note 3: LBUCS Transmit equipment and cables will be installed in racks and must go through acceptance and integration testing prior to installation. Timeframe varies due to complexity of each site's unique system configuration.

Acronym Legend:
 ADM: Acquisition Decision Memorandum
 BCA: Broadcast Control Authority
 BTS: Broadcast Transmitter Station
 CPD: Capability Production Document
 DT: Developmental Testing
 FRP: Full Rate Production
 IOC: Initial Operational Capability
 IOT&E: Initial Operational Test and Evaluation
 LRIP: Low-Rate Initial Production
 MS-C: Milestone C
 OT: Operational Testing
 OTRR: Operational Test Readiness Review
 Tech Eval: Technical Evaluation

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones								△																				
Low Band Universal Communications System (LBUCS) <u>Receive</u>								EDM Program Review								△												
Contractual Milestones/Timeline	▲																											
								EDM																				
Test & Evaluation								△				△																
								DT				DT/OT																
Equipment Procurement																												
												△																△
Equipment Installation																												
																△												△

Note 1: EDM supports DT/OT

Acronym Legend:
 CDR: Critical Design Review OT: Operational Testing
 DT: Developmental Testing PDR: Preliminary Design Review
 EDM: Engineering Development Model

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Studies and Analysis Strategic Communications Assessment Program (SCAP) Continuing Evaluation Program (CEP)																												
Milestones and Deliverables	<div style="display: flex; justify-content: center; align-items: center; gap: 20px;"> △ Analysis Automation Toolset </div>																											
Contractual Milestones/Timelines																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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EXHIBIT R4, RDT&E Schedule Profile		DATE: July 2015
APPROPRIATION/BUDGET ACTIVITY 1319 / 07	PROGRAM ELEMENT 0101402N -Nuclear Command & Control Navy Tech Change (NC3 NTC)	PROJECT NUMBER AND NAME 1083 - NC3 NTC

Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																												
Initial Operation Capability (IOC)																												
Full Development Deployment (FDD)																												
Full Operational Capability (FOC)																												
Engineering and Manufacturing Development																												
NEET - HW Dev																												
NEET - SW Dev																												
NEET - SW2 Dev																												
NEET SW3 Dev																												
NEET SW4 Dev																												
Test & Evaluation Milestones																												
Developmental Test (DT)																												
Operational Test (OT)																												
Production Milestones																												
Limited Deployment (LD)																												
Full Deployment (FD)																												
Technical Refresh (Tech Refresh)																												
Deliveries																												
Limited Deployment (LD)																												
Full Deployment (FD)																												

NOTE:
NUCLEAR COMMAND, CONTROL and COMMUNICATION (EMERGENCY ACTION MESSAGE) ENHANCED TECHNOLOGY (NEET)

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1083				
LBUCS: Low Rate Initial Production (LRIP) Procurement - Transmit	1	2015	3	2015
LBUCS: LRIP Installation - Transmit	3	2015	4	2016
LBUCS: Developmental Test (DT-C1)/Technical Evaluation - Transmit	1	2016	1	2016
LBUCS: Acquisition Decision Memorandum (ADM) (FY16 Hardware Procurement) - Transmit	2	2016	2	2016
LBUCS: FY16 Procurement - Transmit	2	2016	3	2016
LBUCS: Integrated Test (DT-C2) - Transmit	4	2016	4	2016
LBUCS: Acquisition Decision Memorandum (ADM) (FY17-18 H/W Procurement) - Transmit	1	2017	1	2017
LBUCS: FY17 Procurement - Transmit	1	2017	2	2017
LBUCS: Operational Test Readiness Review (OTRR) - Transmit	2	2017	2	2017
LBUCS: Operational Test (IOT&E) - Transmit	2	2017	2	2017
LBUCS: Initial Operational Capability (IOC) - Transmit	2	2017	2	2017
LBUCS: Full Fielding Decision - Transmit	2	2017	2	2017
LBUCS: Installation Transmit	2	2017	4	2018
LBUCS: FY18 Procurement - Transmit	1	2018	2	2018
LBUCS: Engineering Design Model (EDM) - Receive	1	2015	4	2016
LBUCS: Critical Design Review (CDR) - Receive	1	2015	1	2015
LBUCS: Developmental Test (DT) - Receive	2	2016	4	2016
LBUCS: EDM Program Review - Receive	4	2016	4	2016
LBUCS: Developmental Testing/Operational Testing (DT/OT) - Receive	2	2017	4	2017
LBUCS: Full Fielding Program Review - Receive	4	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 1083 / Shore To Ship Com System
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LBUCS: Procurement - Receive	1	2017	4	2019
LBUCS: Installation - Receive	2	2018	4	2020
CEP: Studies and Analysis	1	2015	4	2021
CEP: Analysis Automation	4	2016	4	2016
NC3 NTC: Acquisition MS - IOC	3	2019	3	2019
NC3 NTC: Acquisition MS - FDD	3	2020	3	2020
NC3 NTC: Acquisition MS - FOC	1	2021	1	2021
NC3 NTC: Engineering & Manufacturing Development - NEET HW Dev	1	2017	4	2018
NC3 NTC: Engineering & Manufacturing Development - NEET SW Dev	1	2017	4	2018
NC3 NTC: Engineering & Manufacturing Development - NEET SW2 Dev	1	2019	4	2019
NC3 NTC: Engineering & Manufacturing Development - NEET SW3 Dev	1	2020	4	2020
NC3 NTC: Engineering & Manufacturing Development - NEET SW4 Dev	1	2021	4	2021
NC3 NTC: Test & Evaluation MS Development - DT	1	2019	1	2019
NC3 NTC: Test & Evaluation MS Development - OT	2	2019	2	2019
NC3 NTC: Production MS - LD	4	2017	2	2019
NC3 NTC: Production MS - FD	2	2019	4	2020
NC3 NTC: Production MS - Tech Refresh	1	2021	4	2021
NC3 NTC: Deliverables - LD	4	2018	2	2019
NC3 NTC: Deliverables - FD	2	2019	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms				Project (Number/Name) 3002 / Navy Strategic Comm Project			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3002: Navy Strategic Comm Project	270.510	0.581	0.797	0.983	-	0.983	1.102	1.053	1.064	0.832	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The E-6 is a manned airborne platform that provides survivable, enduring and reliable Command, Control and Communications capability in support of the President, Secretary of Defense and United States strategic and non-strategic forces. In order to respond effectively to emerging capability requirements, continued effort is needed to perform technical evaluations, modeling and simulation, investigative ground and flight testing, enhanced software modifications and development of configuration modifications. Funding has been added starting in FY15 for advanced development engineering and analysis of hardware/software required to optimize E-6 systems for interoperability in a network-centric strategic environment. FY16 funds continued and increased fidelity of the evaluations began in FY15. Additional government personnel were provided to explore and evaluate advanced technology advancements which could provide mission improvements, reduce aircraft weight, and extend weapons systems life span. Funding is critical to pursuit and capture of most cost effective and mission suitable procurement programs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Operational System Development, Studies and Demonstrations	0.581	0.797	0.983	0.000	0.983
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Performed and conducted advanced simulations, integrations and demonstrations using E-6B Systems Integration Laboratory and contractor assets of newly developed commercial technology to address system obsolescence and potential upgrades to ensure survivability and reliability of the E-6B platform.					
FY 2016 Plans: Perform and conduct advanced simulations, integrations and demonstrations using E-6B Systems Integration Laboratory and contractor assets of newly developed commercial technology to address system obsolescence and potential upgrades to ensure survivability and reliability of the E-6B platform.					
FY 2017 Base Plans: Conduct demonstrations of moderate technical readiness level hardware as tailored for E-6B weapons systems usage. Anticipated demonstrations will be in support of development of fiber optic transmission and control and power system upgrades and efficiencies.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.581	0.797	0.983	0.000	0.983

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 3002 / Navy Strategic Comm Project
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN 056400: E-6 Series	206.127	178.987	222.077	-	222.077	223.387	225.241	146.366	149.980	257.150	2,544.750

Remarks

D. Acquisition Strategy

"Research, Development, Test & Evaluation, Navy (RDT&E,N) funds for continuing efforts to perform technical evaluations, modeling & simulation and investigative ground and flight testing. Aircraft Procurement, Navy, Modification of Aircraft (APN-5) funds for integration, procurement and installation of aircraft modifications."

E. Performance Metrics

Mission Systems Evaluation; Technical Analysis 1st Qtr FY17, Design Analysis 2nd Qtr FY17, Systems Integration Lab (SIL) Test and Reporting 4th Qtr FY17.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 3002 / Navy Strategic Comm Project
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development Block I*	C/CPIF	Rockwell Collins : Cedar Rapids, IA	142.880	0.000		0.000		0.000		-		0.000	0.000	142.880	142.880
Award Fees	C/CPAF	Rockwell Collins : Cedar Rapids, IA	3.751	0.000		0.000		0.000		-		0.000	0.000	3.751	3.751
Primary Hardware Development Block IA ECP**	C/CPIF	Rockwell Collins : Cedar Rapids, IA	42.447	0.000		0.000		0.000		-		0.000	0.000	42.447	42.447
Ancillary Hardware Development	C/CPIF	Rockwell Collins : Cedar Rapids, IA	4.933	0.000		0.000		0.000		-		0.000	0.000	4.933	4.933
Training Development WST	C/CPIF	Rockwell Collins : Cedar Rapids, IA	1.213	0.000		0.000		0.000		-		0.000	0.000	1.213	1.213
Subtotal			195.224	0.000		0.000		0.000		-		0.000	0.000	195.224	195.224

Remarks
 * The Rockwell Collins Primary Hardware Development Block I contract was converted from a Competitively Awarded/Cost plus Award Fee to a Cost Plus Incentive Fee beginning in FY07.
 ** The Rockwell Collins Primary Hardware Development Block IA Engineering Change Proposal (ECP) contract was definitized in July 2010.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Studies & Analyses	Various	Various : Not Specified	4.477	0.455	Apr 2015	0.474	Feb 2016	0.808	Nov 2016	-		0.808	Continuing	Continuing	Continuing
Subtotal			4.477	0.455		0.474		0.808		-		0.808	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.668	0.000		0.000		0.000		-		0.000	0.000	0.668	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 3002 / Navy Strategic Comm Project
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test & Evaluation	WR	NAWCAD : Patuxent River, MD	2.148	0.000		0.000		0.000		-		0.000	0.000	2.148	-
Other Support	WR	NAVAIR HQ : Patuxent River, MD	3.645	0.000		0.000		0.000		-		0.000	0.000	3.645	-
Subtotal			6.461	0.000		0.000		0.000		-		0.000	0.000	6.461	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering Support	Various	Various : Not Specified	13.850	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Governmental Support	Various	Various : Not Specified	37.728	0.000		0.123	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support	Various	Various : Not Specified	10.598	0.000		0.000		0.000		-		0.000	0.000	10.598	-
Travel	WR	NAVAIR HQ : Patuxent River, MD	2.172	0.126	Dec 2014	0.200	Oct 2015	0.175	Oct 2016	-		0.175	Continuing	Continuing	Continuing
Subtotal			64.348	0.126		0.323		0.175		-		0.175	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		270.510	0.581	0.797	0.983	0.983	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 3002 / Navy Strategic Comm Project
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Proj 3002	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Advanced Development																												
Studies & Analysis																												
Technical & Design Analysis																												
Systems Integration Lab (SIL) Testing & Reporting																												

2017DON - 0101402N - 3002

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101402N / Navy Strategic Comms	Project (Number/Name) 3002 / Navy Strategic Comm Project
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3002				
Advanced Development: Studies & Analysis: Studies & Analysis	2	2015	4	2016
Advanced Development: Technical & Design Analysis: Technical & Design Analysis (FY17)	1	2017	2	2017
Advanced Development: Technical & Design Analysis: Technical & Design Analysis (FY18)	1	2018	2	2018
Advanced Development: Technical & Design Analysis: Technical & Design Analysis (FY19)	1	2019	2	2019
Advanced Development: Technical & Design Analysis: Technical & Design Analysis (FY20)	1	2020	2	2020
Advanced Development: Technical & Design Analysis: Technical & Design Analysis (FY21)	1	2021	2	2021
Advanced Development: Systems Integration Lab (SIL) Testing & Reporting: SIL Testing & Reporting (FY17)	3	2017	4	2017
Advanced Development: Systems Integration Lab (SIL) Testing & Reporting: SIL Testing & Reporting (FY18)	3	2018	4	2018
Advanced Development: Systems Integration Lab (SIL) Testing & Reporting: SIL Testing & Reporting (FY19)	3	2019	4	2019
Advanced Development: Systems Integration Lab (SIL) Testing & Reporting: SIL Testing & Reporting (FY20)	3	2020	4	2020
Advanced Development: Systems Integration Lab (SIL) Testing & Reporting: SIL Testing & Reporting (FY21)	3	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	14.066	8.323	8.632	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.021
3173: <i>Technology Insertion Program for Savings (TIPS)</i>	14.066	8.323	8.632	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.021

A. Mission Description and Budget Item Justification

MISSION:
The Technology Insertion Program for Savings (TIPS) transitions technology from any source, including those not traditionally associated with defense technology. An effective and robust integration of commercial and military technologies can reduce costs by keeping pace with the fast moving changes in technologies and operational needs. The TIPS program is structured to bring transition deals to closure quickly, and to provide execution year funding for a quick start, bridging the gap until the program of record can fund the completion of the technology insertion.

The mission of the TIPS program is to increase the rate that new cutting edge technologies are inserted into DON acquisition programs in order to significantly reduce operations and maintenance support costs. Opportunities occur when a sufficiently mature technology is identified that can meet a particular need on a timetable which matches that of an acquisition program, and is supported by a business case which justifies the associated cost and schedule risk. The combination of circumstances which create such opportunities can appear, and disappear, well inside the normal budget cycle. This program is designed to be proactive in identifying opportunities and to work with resource sponsors, fleet and force users, and Program Managers (PMs) in constructing viable technology transition deals, one at a time. To ensure the widest possible awareness of emergent commercial technology opportunities, this program interacts with the industry and coordinates closely with Program Executive Offices (PEOs) and Program Managers (PMs) to maintain awareness of insertion opportunities. Utilizing existing authorities, TIPS applies execution year funds where necessary to "jump-start" transitions so they can be inserted and validated leading directly to deployment and/or demonstrations of high risk/high payoff technologies. This Program Element is the only Navy program that addresses current opportunities to reduce operations and support (O&S) cost drivers within a 18-24 month period. As such, planning and initiation are accomplished within the same fiscal year, which causes a non-traditional financial execution profile for the program. The program therefore does not meet traditional expenditure benchmarks for the first year of execution, but rapidly recovers in the second year.

Funding increases to TIPS reflect emphasis on increasing the number of projects that reduce operations and support costs, since the number of projects funded is directly proportional to the cost benefits provided to DoN, and demand continues to grow as operations and sustainment budgets experience increased downward pressure.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.480	18.632	19.867	-	19.867
Current President's Budget	8.323	8.632	0.000	-	0.000
Total Adjustments	-0.157	-10.000	-19.867	-	-19.867
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-10.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.157	0.000			
• Program Adjustments	0.000	0.000	-19.867	-	-19.867

Change Summary Explanation

The FY 2016 funding request was reduced by -\$0.5 million to account for the availability of prior year execution balances.

Beginning in FY 2017, funding is realigned to PE 0603382N for Rapid Prototype Development.

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>				Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3173: <i>Technology Insertion Program for Savings (TIPS)</i>	14.066	8.323	8.632	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.021
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the Technology Insertion Program for Savings (TIPS) is to fund smart solutions for rapid insertion of new technologies that are inserted into DON acquisition programs in order to reduce operations and maintenance support costs across DoN acquisition programs. The TIPS program is structured to quickly transition applicable commercial off-the-shelf solutions and late-stage development technologies from any source, to meet emerging opportunities that lead to cost efficiencies in operations, maintenance, support, training, and/or logistics, and is supported by a business case that justifies all associated costs and schedule risks while demonstrating a positive return on investment (ROI) that is quantifiable and clearly explained given realistic assumptions. TIPS provides execution year funding for a rapid start, bridging the gap until the program of record can fund the completion of the technology insertion.

Funding increase from FY15 through FY16 provides continuity for executing efforts already committed in FY14 and FY15, ensuring benefits are realized once efforts have transitioned to meet current needs.

Beginning in FY 2017, funding is realigned to new PE 0603382N for Rapid Prototype Development.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: TECHNOLOGY INSERTION PROGRAM FOR SAVINGS (TIPS)	8.323	8.632	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Initiated 6-8 new TIPS projects to improve naval warfighting capabilities by inserting new technologies that will improve overall maintenance and sustainment of current systems by replacing, modifying, or creating more efficient components, software, and processes that will significantly increase the performance, reliability, and integrity of legacy systems while reducing overall operational and support costs across all DoN acquisition programs.					
Projects that Completed in FY2015: (Name & ROI% Averaged Over 5 years)					
- Improved Low Cost Gyro Stabilized Heading Sensor: ROI% 465					
- SPAWAR Quick Reference Guide: ROI% 1151					
- Transportation Exploitation Tool 2 (TET2): ROI% 601					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Framework for Accessing Cost & Technology (FACT) for C4I: ROI% 331					
Projects Continuing to Execute through FY2015: (Name & ROI% Averaged Over 5 years)					
- Virginia Class TEMPALT Electronics Rack: ROI% 961					
- Modified Induction Heat Technology for Reduced Cost Removal of Special Hull Treatment: ROI% 754					
- Advanced Buoyant Cable Antenna (ABCA): ROI% 38					
- Lot Serial Number Accuracy (LSNA): ROI% 360					
- LCS Class 1 Stern Tube Seal Design Improvements: ROI% 7540					
- Interactive Structural Analysis Environment & Management System: ROI% 11809					
- Submarine Combat System Architecture Modernization: ROI% 1408					
- Autonomous Target Acquisition Weapon Image Source Expansion: ROI% 469					
- Remote Mine-hunting System Cable Maintenance Winch: ROI% 367					
- Intermediary Application for Key Management Infrastructure: ROI% 690					
- Navy Nuclear Command, Control, & Comms Emergency Action Message Enhanced Technology (NEET): ROI % 438					
- Virtualization in Submarine Warfare Federated Tactical System (V-SWFTS): ROI% 4254					
- Radar Technology Engineering Upgrades A, B, & C					
(A) ROI% 313					
(B) ROI% 120					
(C) ROI% 92					
FY 2016 Plans:					
Continue efforts from FY 2015 unless otherwise noted as complete.					
Projects Receiving all Remaining Funds in FY2016 to Complete Transitions: (Name & ROI% Averaged Over 5 years)					
- Virginia Class TEMPALT Electronics Rack: ROI% 961					
- Modified Induction Heat Technology for Reduced Cost Removal of Special Hull Treatment: ROI% 754					
- Advanced Buoyant Cable Antenna (ABCA): ROI% 38					
- Lot Serial Number Accuracy (LSNA): ROI% 360					
- LCS Class 1 Stern Tube Seal Design Improvements: ROI% 7540					
- Interactive Structural Analysis Environment & Management System: ROI% 11809					
- Submarine Combat System Architecture Modernization: ROI% 1408					
- Autonomous Target Acquisition Weapon Image Source Expansion: ROI% 469					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Remote Mine-hunting System Cable Maintenance Winch: ROI% 367 - Intermediary Application for Key Management Infrastructure: ROI% 690 - Navy Nuclear Command, Control, & Comms Emergency Action Message Enhanced Technology (NEET): ROI % 438 - Virtualization in Submarine Warfare Federated Tactical System (V-SWFTS): ROI% 4254 - Radar Technology Engineering Upgrades A, B, & C (A) ROI% 313 (B) ROI% 120 (C) ROI% 92 <p>New Start Projects Cancelled in FY2016 - Funds realigned for Rapid Prototype Development: (Name & ROI% Avg Over 5 years)</p> <ul style="list-style-type: none"> - Close-In Weapon System Upgrades for CCA & Gyro : ROI% 710 - Close-In Weapon System Upgrades for Stabilization Motor Upgrades: ROI% 650 - Flexible Signals Exploitation Utilizing a Framework Platform: ROI% 1120 - Universal Naval Aluminum Degree of Sensitization (DoS) Probe: ROI% 6888 - Personal Property Transportation Audit Systems: ROI% 225 - In-Situ Repair of 500KW Motor Generator Sets: ROI% 801 - Energy Absorbing Aerial Refueling Hose: ROI% 207 - CANES Rapid Installation Key Enabling Technologies: ROI% 431 - Low Cost Enabling Mine-hunting Sonar Timing Software: ROI% 1397 - Interactive Culturally Accurate AvataR: ROI% 429 - Multiband Broadband Antenna for Navy Ships: ROI% 759 <p>FY 2017 Base Plans: Funding realigned to PE 0603382N for Rapid Prototype Development.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	8.323	8.632	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions) N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / Rapid Technology Transition (RTT)	Project (Number/Name) 3173 / Technology Insertion Program for Savings (TIPS)

C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

Utilize existing authorities on a case-specific basis to exploit rapid technology transition opportunities.

E. Performance Metrics

The TIPS program will initiate new projects each year that provide for new, innovative, and potentially disruptive technology being inserted into DON acquisition programs. The TIPS projects will have a greater than 70% success rate of insertion and fielding of technology into DON warfighting systems and/or operations and support cost efforts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LCS 1 Class Stern Tube	C/FFP	NSWC : Carderock, MD	0.721	1.013	Oct 2014	0.214	Oct 2015	0.000		-		0.000	0.000	1.948	-
Improved Low Cost Gyro	WR	NUWC : Newport, RI	1.030	0.000		0.000		0.000		-		0.000	0.000	1.030	-
Advance Capability Bouyant Cable Antenna	C/FFP	NUWC : Newport, RI	1.618	0.293	Oct 2014	0.000		0.000		-		0.000	0.000	1.911	-
Lot Serial Number Accuracy	C/CPFF	NAVSUP : Mechanicsburg, PA	0.808	0.829	Oct 2014	0.000		0.000		-		0.000	0.000	1.637	-
Transportation Exploitation Tool (TET 2)	C/CPFF	NAVFAC EXWC : Port Hueneme, CA	2.000	0.000		0.000		0.000		-		0.000	0.000	2.000	-
VA Class Submarine TEMPALT Electronics Rack	WR	NUWC : Newport, RI	1.200	0.180	Oct 2014	0.000		0.000		-		0.000	0.000	1.380	-
SPAWAR Quick Reference Guides	C/IDIQ	SPAWAR : San Diego, CA	0.150	0.043	Oct 2014	0.000		0.000		-		0.000	0.000	0.193	-
FACT for C4I	Various	GTRI : Various	0.810	0.000		0.000		0.000		-		0.000	0.000	0.810	-
Interactive Structural Analysis Environment & Management System	C/BOA	ESRD : St.Louis, MO	0.600	0.605	Oct 2014	0.795	Oct 2015	0.000		-		0.000	0.000	2.000	-
Submarine Combat System Architecture Modernization	C/CPIF	General Dynamics : Pittsfield, MA	0.616	0.607	Oct 2014	0.627	Oct 2015	0.000		-		0.000	0.000	1.850	-
Autonomous Target Acquisition Weapon Image Source Expansion	Various	Various : Various	0.700	0.560	Oct 2014	0.240	Oct 2015	0.000		-		0.000	0.000	1.500	-
Remote Minehunting System Cable Maintenance Winch	C/IDIQ	NAVSEA PMS 403 : Washington DC	0.500	0.700	Oct 2014	0.300	Oct 2015	0.000		-		0.000	0.000	1.500	-
Modified Induction Heat Technology for Reduced Cost Removal of SHT	WR	NRL : Washington DC	0.400	0.150	Oct 2014	0.000		0.000		-		0.000	0.000	0.550	-
Intermediary Application for Key Management Infrastructure	WR	SPAWAR : San Diego, CA	0.055	0.445	Oct 2014	1.500	Oct 2015	0.000		-		0.000	0.000	2.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Navy Nuclear Command, Control & Comms Emergency Action Message Enhanced Technology (NEET)	WR	SSC PAC : San Diego, CA	0.000	1.000	Oct 2014	1.000	Oct 2015	0.000		-		0.000	0.000	2.000	-
Virtualization in Submarine Warfare Federated Tactical System	C/CPFF	Progeny Systems : Manassas, VA	0.000	0.330	Oct 2014	1.670	Oct 2015	0.000		-		0.000	0.000	2.000	-
Radar Technology Engineering Upgrades	Various	Various(Gov/ Contract mix) : Various locations	0.000	0.264	Oct 2014	0.816	Oct 2015	0.000		-		0.000	0.000	1.080	-
Subtotal			11.208	7.019		7.162		0.000		-		0.000	0.000	25.389	-

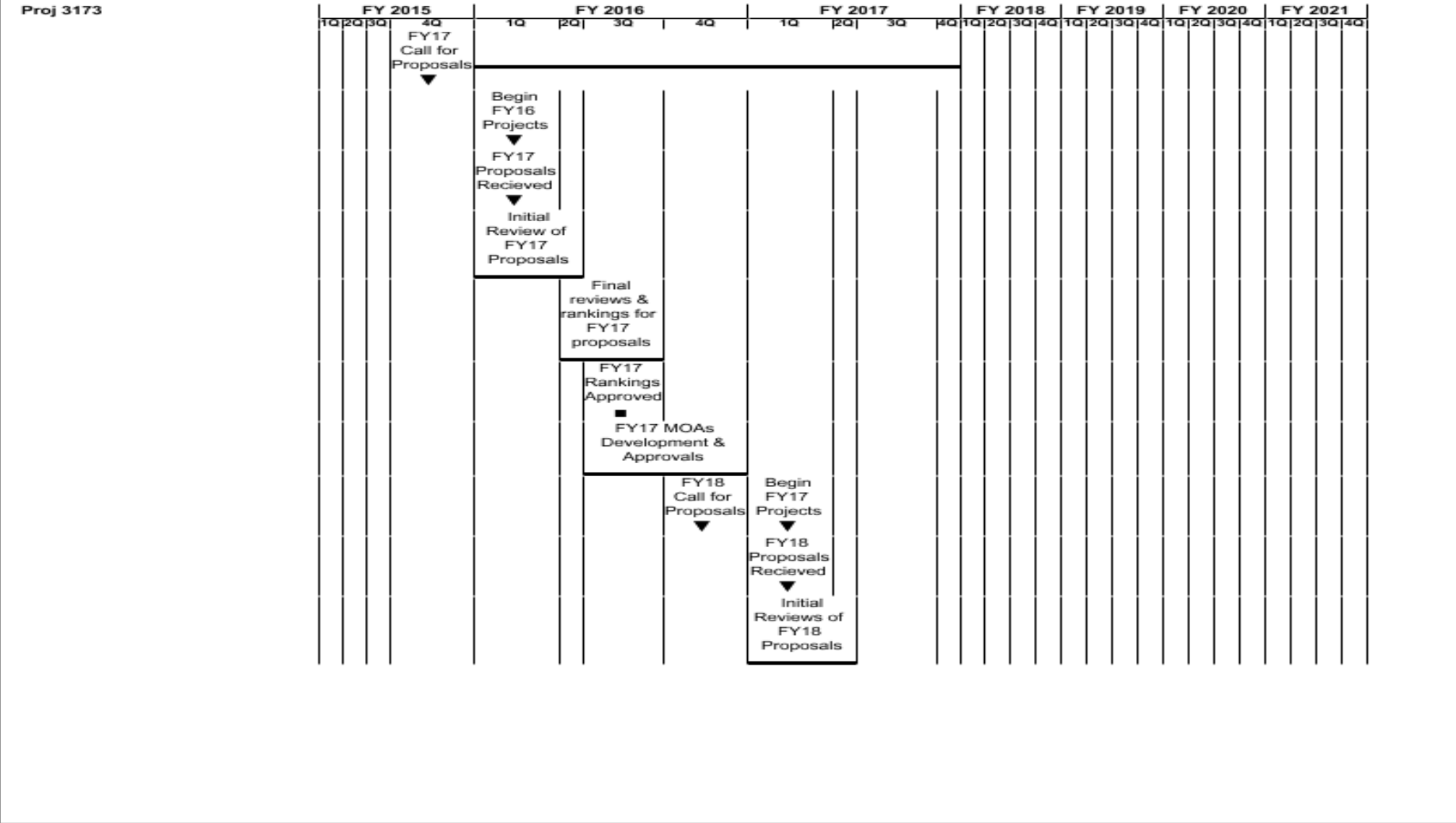
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various	Various	Various : Various	2.858	1.304	Oct 2014	1.470	Oct 2015	0.000		-		0.000	0.000	5.632	Continuing
Subtotal			2.858	1.304		1.470		0.000		-		0.000	0.000	5.632	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			14.066	8.323	8.632	0.000	-	0.000	0.000	31.021	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0203761N / Rapid Technology Transition
(RTT)

Project (Number/Name)
3173 / Technology Insertion Program for
Savings (TIPS)

											Final reviews & rankings for FY18 proposals													
											FY18 Rankings Approved													
2017DON - 0203761N - 3173																								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0203761N / <i>Rapid Technology Transition (RTT)</i>	Project (Number/Name) 3173 / <i>Technology Insertion Program for Savings (TIPS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3173				
Oversee Execution of Projects	1	2016	4	2017
FY17 Call for Proposals	4	2015	4	2015
Begin Selected FY16 Projects	1	2016	1	2016
FY17 Proposals Recieved	1	2016	1	2016
FY17 Initial Review of Proposals	1	2016	2	2016
TIPS WG conducts final reviews and ranking	2	2016	3	2016
Dir. of Technology approves FY17 rankings	3	2016	3	2016
FY17 MOAs drafted, Staffed and approved	3	2016	4	2016
FY18 Call for Proposals	4	2016	4	2016
Begin Selected FY17 Projects	1	2017	1	2017
FY18 Proposals Recieved	1	2017	1	2017
FY18 Initial Reviews of Proposals	1	2017	2	2017
FY18 TIPS WG conducts final reviews and ranking	2	2017	3	2017
Dir of Technology approves FY18 rankings	3	2017	3	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	4,823.378	84.976	135.755	189.125	-	189.125	165.548	142.499	112.815	115.594	Continuing	Continuing
1662: <i>F/A-18 Improvement</i>	4,114.429	72.075	109.233	67.886	-	67.886	72.171	61.150	50.069	51.766	Continuing	Continuing
2065: <i>F/A-18 Radar Upgrade</i>	708.949	3.033	15.022	13.926	-	13.926	9.197	7.117	8.911	8.916	Continuing	Continuing
2069: <i>F/A-18 Infrared Search and Track (IRST)</i>	0.000	0.000	0.000	107.313	-	107.313	84.180	74.232	53.835	54.912	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	9.868	11.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.368

A. Mission Description and Budget Item Justification

Decrease in F/A-18 SQUADRONS by \$8.098M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

The F/A-18 is required to perform multiple missions. Capabilities of the F/A-18 weapon system and ancillary equipment can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging future threats. Continued F/A-18 E/F and EA-18G "Flight Plan" spiral capability development is critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of Navy Aviation Plan 2030. Development continues for a platform solution to threat Advanced Electronic Attack and Counter-Electronic Attack (CEA). F/A-18 solutions to CEA include upgrades to existing sensors such as F/A-18 Radar Upgrade, Infrared Search and Track Block I/II, and development of a fused picture between these sensors. Additionally, continued advanced development engineering for improvements in reliability and maintainability are required to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

Infrared Search and Track (IRST) is not a new start program. Work was previously completed under project unit 1662 and has been moved to project unit 2069 in FY17.

Congressional adds are for support of Dual Mode Brimstone and an engine noise reduction study.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	86.216	133.265	233.175	-	233.175
Current President's Budget	84.976	135.755	189.125	-	189.125
Total Adjustments	-1.240	2.490	-44.050	-	-44.050
• Congressional General Reductions	-	-0.010			
• Congressional Directed Reductions	-	-9.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	11.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.240	0.000			
• Program Adjustments	0.000	0.000	-1.838	-	-1.838
• Rate/Misc Adjustments	0.000	0.000	-42.212	-	-42.212

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

 Congressional Add: *Dual Mode Brimstone Integration*

 Congressional Add: *Noise Reduction*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	9.868	10.000
	0.000	1.500
Congressional Add Subtotals for Project: 9999	9.868	11.500
Congressional Add Totals for all Projects	9.868	11.500

Change Summary Explanation

Technical:

1662: Not Applicable

2065: Not Applicable

Schedule:

1662: Not Applicable

2065: Not Applicable

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons				Project (Number/Name) 1662 / F/A-18 Improvement			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1662: F/A-18 Improvement	4,114.429	72.075	109.233	67.886	-	67.886	72.171	61.150	50.069	51.766	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The F/A-18 is a multi-mission strike fighter aircraft that is used in Air-to-Air, strike, surveillance, reconnaissance and tanking roles through selected use of external equipment (fuel tanks, tactical and reconnaissance pods, and various ordnance launching racks). Additional capabilities are required for interoperability in a network-centric tactical environment. In order to respond effectively to emerging future threats, F/A-18 aircraft capabilities are being expanded and upgraded to incorporate new/enhanced weapons systems and avionics including Dual Mode Weapons, Counter-Electronic Attack (CEA), Infra-red Search and Track (IRST) integrated with the Active Electronically Scanned Array (AESA) Radar to provide Narrow Band High Gain Electronic Attack and Multi-System Integration. Continued advanced development engineering and analysis of hardware/software is required to successfully optimize fleet F/A-18 weapon systems for interoperability in a network centric tactical environment (such as Naval Integrated Fire Control-Counter Air), to include: enhanced software capabilities, potential new hardware development, enhanced existing hardware, and enhanced network centric capabilities. Additionally, continued effort is needed to perform technical evaluations, modeling and simulations, investigative flight testing, enhanced software modifications based on reported fleet deficiencies and the development and testing of design modifications to address obsolescence issues with the F/A-18 weapon system and ancillary equipment. This funding line continues F/A-18E/F "Flight Plan" spiral capability development, to include Multi-System Integration and further Flight Plan Engineering and System Configuration Set development and integration. This budget continues funding for F/A-18A-F Test Wing Maintenance support and funds development efforts needed for integration of air launched laser guided rockets on F/A-18 A+/C/D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Electro-Optical Infra-Red Search and Track (IRST)	40.157	43.365	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Technology development and engineering and manufacturing development of an IRST sensor for the F/A-18 E/F. Block I supports technology development and engineering and manufacturing development of an IRST sensor for the F/A-18E/F to provide an alternate fire control system in a high Electronic Attack / Radio Detection and Ranging (RADAR) denied environment. Block II IRST modifies the Infra-Red Receiver and processor to provide full Capabilities Development Document capability and enhanced warfighting capability through an improved engagement timeline, improved situational awareness, longer range passive detection and tracking and a larger field of regard with specification performance.					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 1662 / F/A-18 Improvement
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Completed Engineering and Development Phase (hardware and software) to include Engineering Development Model conversion. Conducted Integrated Baseline Review 2 and Operational Testing Readiness Review. Completed Integration Testing and start production on LRIP-1 (APN funded). Completed Milestone C Review.</p> <p>FY 2016 Plans: Begin additional development efforts for fleet required Long Wave Infrared Search and Track (LWIRST). Conduct Integrated Baseline Review 2 and Operational Test Readiness Review. Complete Integration Testing and start production on LRIP-2 (APN funded).</p> <p>FY 2017 Base Plans: IRST project is moved to Project Unit 2069 F/A-18 Infrared Search and Track (IRST).</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Multi-System Integration</p> <p align="right">Articles:</p> <p>Description: Multi-System Integration migrates from the previous Multi-Sensor Integration Phased approach and allows for insertion of new technologies and requirements to keep pace with rapidly evolving warfighter demands. Also, includes a naming convention change in regards to System Configuration Set (SCS) builds 27, 29 & 31. Initially all "X" labeled builds to include Block I Super Hornets, now 27, 29, & 31 will no longer include Super Hornets thus going back to a "C" SCS label designation to include only legacy A-D aircraft.</p> <p>FY 2015 Accomplishments: Multi-System Integration will continue efforts begun with Multi-Sensor Integration Phase III including system software design and development. Primary efforts will be software driven through the development, integration and testing of System Configuration Sets H12 and H14. Decision Superiority gaps in Air Warfare will be addressed through the ongoing integration of weapons and sensors combined with display improvements to enhance air-to-surface, air-to-air and Counter Electronic Attack sensor integration. Upgrades to display firmware, display symbology, Crew Vehicle Interface improvements and air-to-air Mission Tactical Picture improvements. Development and Integration of Precision Approach Landing Capability with Civilian Interoperability functionality implemented through a combined hardware and software solution utilizing a Civilian Instrument Landing System and Space Based Augmentation System including a Multi-Mode Receiver and Space Based Augmentation System enabled GPS receiver. Continued updates to Wingman Compatability</p>	14.486	32.131	35.124	0.000	35.124
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 1662 / F/A-18 Improvement
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>improvements such as Unique Identification and Enhanced Interference Blanking Unit and continued updates to Integrated Defensive Counter Measures suite of electronic warfare hardware.</p> <p>FY 2016 Plans: Multi-System Integration will continue efforts begun with Multi-Sensor Integration Phase III including system software design and development. Primary efforts will be software driven through the development, integration and testing of System Configuration Sets H12, H14 and H16. Decision Superiority gaps in Air Warfare will be addressed through the ongoing integration of weapons and sensors combined with display improvements to enhance air-to-surface, air-to-air and Counter Electronic Attack sensor integration. Upgrades to display firmware, display symbology, Crew Vehicle Interface improvements and air-to-air Mission Tactical Picture improvements. Development and Integration of Precision Approach Landing Capability with Civilian Interoperability functionality implemented through a combined hardware and software solution utilizing a Civilian Instrument Landing System and Space Based Augmentation System including a Multi-Mode Receiver and Space Based Augmentation System enabled GPS receiver. Continued updates to Wingman Compatability improvements such as Unique Identification and Enhanced Interference Blanking Unit and continued updates to Integrated Defensive Counter Measures suite of electronic warfare hardware.</p> <p>FY 2017 Base Plans: Flight Plan Multi-System Integration (MSI) of capabilities continue through System Configuration Set (SCS) mission computer, Joint Mission Planning System Unique Planning Component, and weapon system software updates associated with each incremental Block (H build) software update. Decision Superiority gaps in Air and Surface Warfare will continue with ongoing integration of weapons and sensors combined with Display Improvements to enhance air-to-surface, air-to-air and Counter Electronic Attack sensor integration. Increase to engineering efforts for integration of active and passive kill chain capabilities and sensors associated with flight plan Naval Integrated Fires Control, for Over the Horizon Anti-Surface Warfare and Strike Accelerator target identification transition efforts. MSI algorithm and sensor developmental efforts also increase at test activities for ongoing modeling and simulation upgrades such as Net Enabled Weapon Controller Interface Model interoperability software and equipment, and Live Virtual Construct interoperability efforts.</p> <p>FY 2017 OCO Plans: N/A</p>					

Title: Flight Plan Engineering / System Configuration Set Development and Integration	10.409	28.191	26.956	0.000	26.956
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Continue F/A-18 E/F and EA-18G "Flight Plan" spiral capability development is critical to the baseline of the Super Hornet next generation mission system capability. Funding will support the development, test and integration efforts required to maintain tactical relevance in support of Navy Aviation Plan 2030.</p> <p>FY 2015 Accomplishments: Continued Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; and Precision Approach and Landing Capability.</p> <p>FY 2016 Plans: Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Flight Path Control (Magic Carpet); and Precision Approach and Landing Capability, in support of Integrated Capability Package 2 and 3.</p> <p>FY 2017 Base Plans: Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy, Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding supports (hardware and software), test and integration efforts for Flight Plan requirements such as Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Flight Path</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Control (Magic Carpet); and Precision Approach and Landing Capability, in support of Integrated Capability Package 2 and 3.						
FY 2017 OCO Plans: N/A						
Title: Test Wing Maintenance Conversion		6.923	4.846	4.806	0.000	4.806
		Articles:	-	-	-	-
Description: Funding supports maintenance of aircraft at NAVAIR Test Wing used to support Program Office objectives.						
FY 2015 Accomplishments: Performed aircraft maintenance on Test Wing aircraft. FY15 restores Test Wing funding to previously planned levels.						
FY 2016 Plans: Perform aircraft maintenance on Test Wing aircraft.						
FY 2017 Base Plans: Perform aircraft maintenance on Test Wing aircraft.						
FY 2017 OCO Plans: N/A						
Title: F/A-18 Obsolescence Redesign		0.100	0.700	1.000	0.000	1.000
		Articles:	-	-	-	-
Description: Develop and test modifications to address obsolescence issues.						
FY 2015 Accomplishments: Developed and tested design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues.						
FY 2016 Plans: Develop and test design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues.						
FY 2017 Base Plans:						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develop and test design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	72.075	109.233	67.886	0.000	67.886

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0143: EA-18G	1,503.534	858.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12,905.711
• APN/05250: F-18 SERIES MOD	704.324	920.351	1,023.492	-	1,023.492	1,247.611	1,387.255	1,565.656	1,522.806	7,441.836	22,713.484
• RDTEN/3063: EA-18G DEVELOPMENT	18.653	46.921	116.761	-	116.761	164.999	142.820	65.642	67.405	Continuing	Continuing
• APN/0145: FA-18E/F	0.000	350.000	0.000	184.912	184.912	1,309.000	0.000	0.000	0.000	0.000	45,380.856

Remarks

D. Acquisition Strategy

The F/A-18 Improvement program consists of extensive spiral development efforts mapped out in the capability-based approach F/A-18 E/F "Flight Plan." These efforts are critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of Navy Aviation Plan 2030.

The major programs within the F/A-18 Improvement project are based on six Weapon System Capabilities: Net Centric Operations/Battle Space Management, Sensor Integration, Air to Ground and Maritime Attack, and Air to Air Attack. The major efforts included in this project are: Dual Mode Weapons integration; an Infra-Red Search and Track Multi-System Integration; continued advanced development and F/A-18E/F Flight Plan engineering and analysis; continued enhanced software capabilities development; and engineering support to perform technical evaluations, modeling and simulations, and investigative flight testing.

- Infra-Red Search and Track (IRST). The IRST Block I/II program is a Navy program in the Engineering Manufacturing and Development (EMD) phase. A Block I system will be developed by the Navy that will meet requirements for a Counter-Electronic Attack capability. This capability will reach Initial Operational Capability (IOC) in FY 2018.

- Multi-System Integration. Multi-System Integration development is provided on a sole source cost plus fixed fee contract on a Research and Development Basic Ordering Agreement to Boeing.

E. Performance Metrics

IRST Program achieved MS B on 17 June 2011, achieved MS C on 02 December 2014, and scheduled for IOC in 3rd Quarter of FY2018.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IRST - Primary Hardware Development Infra-Red Search and Track (IRST)	C/CPIF	Boeing : St. Louis, MO	154.712	9.479	Nov 2014	24.748	Feb 2016	0.000		-		0.000	0.000	188.939	188.939
Multi System Integration - Develop Sensor Integration	C/IDIQ	Various : Various	0.000	0.000		1.500	Feb 2016	12.500	Feb 2017	-		12.500	Continuing	Continuing	Continuing
Multi-System Integration Development Support	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		13.500	Dec 2016	-		13.500	0.000	13.500	-
Multi-System Integration Development Support	WR	NAWCAD : Pax River, MD	0.000	0.000		0.000		5.000	Dec 2016	-		5.000	0.000	5.000	-
Flight Plan / PALC(WAAS)	C/CPFF	Boeing : St. Louis, MO	0.000	0.000		3.650	Jul 2016	3.664	Jul 2017	-		3.664	0.000	7.314	7.314
Flight Plan/SCS Development(Magic Carpet)	C/CPIF	GE : Various	0.000	0.000		5.000	Mar 2016	0.000		-		0.000	0.000	5.000	5.000
Flight Plan/SCS Development	WR	NAWCAD : Pax River, MD	0.000	4.331	Nov 2014	1.820	Jan 2016	5.496	Dec 2016	-		5.496	0.000	11.647	-
Flight Plan/SCS Development (Magic Carpet)	C/CPIF	Boeing : St. Louis, MO	0.000	0.000		9.761	Jan 2016	11.454	Dec 2016	-		11.454	0.000	21.215	21.215
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	580.487	0.000		0.000		0.000		-		0.000	0.000	580.487	-
Subtotal			735.199	13.810		46.479		51.614		-		51.614	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IRST - Software (S/W) Development	WR	NAWCWD : China Lake, CA	2.464	7.854	Dec 2014	1.370	Dec 2015	0.000		-		0.000	0.000	11.688	-
IRST - Development Support	WR	NAWCWD : China Lake, CA	6.522	0.372	Dec 2014	0.332	Dec 2015	0.000		-		0.000	0.000	7.226	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IRST - Development Support	WR	NAWCAD : Pax River, MD	13.069	2.798	Dec 2014	2.100	Dec 2015	0.000		-		0.000	0.000	17.967	-
IRST - Development Support	WR	NAWCAD : Lakehurst, NJ	2.163	0.844	Dec 2014	0.707	Dec 2015	0.000		-		0.000	0.000	3.714	-
IRST - Development Support	WR	FRC Southeast : Jacksonville, FL	4.823	1.038	Dec 2014	0.503	Dec 2015	0.000		-		0.000	0.000	6.364	-
Multi-System Integration Development Support	WR	NAWCAD : Pax River, MD	0.000	3.250	Dec 2014	2.113	Dec 2015	0.000		-		0.000	0.000	5.363	-
Multi-System Integration Development Support	WR	NAWCWD : China Lake, CA	0.000	3.775	Dec 2014	14.733	Jan 2016	0.000		-		0.000	0.000	18.508	-
Multi-System Integration Development Support	SS/IDIQ	Boeing : St. Louis, MO	0.000	4.500	Dec 2014	8.620	Dec 2015	0.000		-		0.000	0.000	13.120	13.120
Multi-System Integration Development Support	WR	NSMA : Arlington, VA	0.000	2.300	Mar 2015	2.300	Mar 2016	2.300	Mar 2017	-		2.300	Continuing	Continuing	Continuing
Flight Plan/System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	2.165	0.000		0.898	Nov 2015	2.714	Nov 2016	-		2.714	Continuing	Continuing	Continuing
Obsolescence Redesign	Various	Various : Various	0.100	0.100	Jun 2015	0.700	Jun 2016	1.000	Jun 2017	-		1.000	Continuing	Continuing	Continuing
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	3,022.595	0.000		0.000		0.000		-		0.000	0.000	3,022.595	-
Subtotal			3,053.901	26.831		34.376		6.014		-		6.014	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IRST - Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Pax River, MD	15.543	1.090	Dec 2014	1.100	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
IRST - DT&E	WR	NAWCWD : China Lake, CA	13.238	6.262	Dec 2014	3.500	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
IRST - Operational Test & Evaluation (OT&E)	WR	OPTEVFOR : VX-9	1.000	6.406	Dec 2014	4.940	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Multi-System Integration	WR	OPTEVFOR : Norfolk, VA	0.000	0.661	Dec 2014	0.800	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Flight Plan/SCS Test & Evaluation	WR	NAWCAD : Pax River, MD	0.000	0.000		1.000	Nov 2015	1.000	Dec 2016	-		1.000	0.000	2.000	-
AIM-120 Test Assets	MIPR	USAF : Eglin AFB, FL	2.000	0.000		2.000	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	135.335	0.000		0.000		0.000		-		0.000	0.000	135.335	-
Subtotal			167.116	14.419		13.340		1.000		-		1.000	-	-	-

Remarks
Test Assets (AIM-120) procured as live fire test assets in support of F/A-18E/F Improvements programs (IRST, MSI (SCS block builds)) and weapons integration efforts specific to the F/A-18.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Mgmt Support - MISC	Various	NAWCAD : Pax River, MD	12.105	2.100	Dec 2014	2.100	Dec 2015	0.659	Dec 2016	-		0.659	Continuing	Continuing	Continuing
Seaport CSS - Program Management Support	C/CPFF	Wyle Lab : Pax River, MD	17.882	3.442	Dec 2014	3.442	Mar 2016	2.626	Dec 2016	-		2.626	0.000	27.392	27.392
Travel	Various	NAVAIR : Pax River, MD	4.923	0.250	Nov 2014	0.250	Nov 2015	0.250	Nov 2016	-		0.250	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCAD : Pax River, MD	26.695	3.462	Dec 2014	2.423	Dec 2015	2.403	Dec 2016	-		2.403	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCWD : China Lake, CA	27.622	3.461	Dec 2014	2.423	Dec 2015	2.403	Dec 2016	-		2.403	Continuing	Continuing	Continuing
Flight Plan / System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	2.000	2.150	Dec 2014	2.200	Dec 2015	0.459	Dec 2016	-		0.459	Continuing	Continuing	Continuing
Flight Plan / System Configuration Set Development & Integration	WR	NAWCWD : China Lake, CA	2.000	2.150	Dec 2014	2.200	Dec 2015	0.458	Dec 2016	-		0.458	Continuing	Continuing	Continuing

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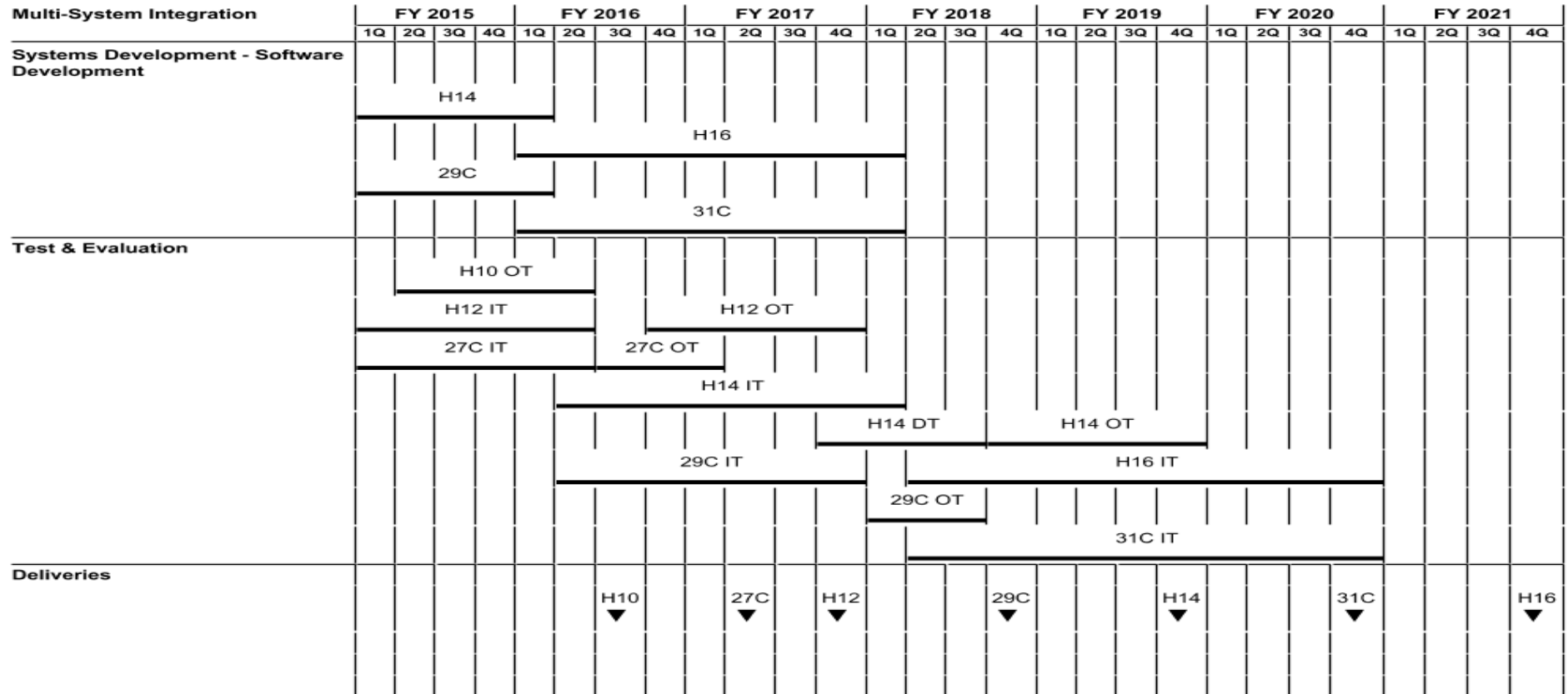
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

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R-1 Program Element (Number/Name)
PE 0204136N / F/A-18 Squadrons

Project (Number/Name)
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Flight Plan Engineering	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
System Development	Hardware and Software Development																															
	Modeling and Simulation																															
	Studies and Analysis																															
Test and Evaluation	Developmental, Integration and Operational Testing																															
Deliveries																																
Software Fleet Release							H10 ▼				27C ▼				H12 ▼				29C ▼				H14 ▼				31C ▼				H16 ▼	

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Test Wing Maintenance	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Support																												
	Test Wing Maintenance Support																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Obsolescence Redesign																												
System Development																												
F/A-18 Weapon System & Ancillary Equipment	Obsolescence Redesign																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Infra-Red Search and Track				
Acquisition Milestones: Milestones: Full Rate Production Decision Review (FRP DR)	3	2017	3	2017
Acquisition Milestones: Milestones: Milestone C (MS C)	1	2015	1	2015
Acquisition Milestones: Milestones: Initial Operational Capability (IOC)	3	2018	3	2018
System Development: Engineering and Manufacturing Development: Engineering and Manufacturing Development	1	2015	1	2020
System Development: Engineering and Manufacturing Development: Eng Dev Model (EDM) IRST Delivery - (Environmental Evaluation Unit-EEU)	1	2015	1	2015
System Development: Engineering and Manufacturing Development: EDM Conversion	1	2015	4	2016
System Development: Software Development: H10+ Fleet Release	2	2017	2	2017
System Development: Software Development: H12 Fleet Release	4	2017	4	2017
System Development: Software Development: IRST Software Build	1	2015	3	2015
System Development: Reviews: Integrated Baseline Review (IBR) - 1	3	2015	3	2015
System Development: Reviews: Integrated Baseline Review (IBR) - 2	2	2016	2	2016
System Development: Reviews: Operational Testing Readiness Review (OTRR)	1	2016	1	2016
System Development: Reviews: Physical Configuration Audit (PCA)	2	2017	2	2017
Test and Evaluation: Integration Testing: Integration Testing (IT-B1)	1	2015	1	2015
Test and Evaluation: Integration Testing: Integration Testing (IT-C1)	1	2015	1	2016
Test and Evaluation: Operational Testing: Operational Assessment (OA) 2	3	2015	3	2015
Test and Evaluation: Operational Testing: Integrated Operational Test & Evaluation (IOT&E)	1	2016	3	2016
Test and Evaluation: Operational Testing: OPEVAL Report	3	2016	3	2016
Production Milestones: Contract Awards: EDM (Block II)	2	2016	2	2016
Production Milestones: Contract Awards: LRIP 1 APN	2	2015	2	2015

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: LRIP 2 APN	1	2016	1	2016
Production Milestones: Contract Awards: FRP 1 Start	3	2017	3	2017
Production Milestones: Contract Awards: FRP 2 Start	1	2018	1	2018
Production Milestones: Contract Awards: FRP 3 Start	1	2019	1	2019
Production Milestones: Contract Awards: FRP 4 Start	1	2020	1	2020
Production Milestones: Deliveries: Productionized EDM (Qty 4)	2	2015	4	2015
Production Milestones: Deliveries: LRIP 1 (Lot 1 - Qty 6)	2	2017	4	2017
Production Milestones: Deliveries: LRIP 2 (Lot 2 - Qty 12)	1	2018	1	2019
Production Milestones: Deliveries: FRP 1 (Lot 3 - Qty 12)	2	2019	2	2020
Production Milestones: Deliveries: FRP 2 (Lot 4 - Qty 13)	2	2020	1	2021
Multi-System Integration				
Systems Development - Software Development: H14 Software Development	1	2015	1	2016
Systems Development - Software Development: H16 Software Development	1	2016	1	2018
Systems Development - Software Development: 29C Software Development	1	2015	1	2016
Systems Development - Software Development: 31C Software Development	1	2016	1	2018
Test & Evaluation: H10 Operational Testing	2	2015	2	2016
Test & Evaluation: H12 Integration Testing	1	2015	2	2016
Test & Evaluation: H12 Operational Testing	4	2016	4	2017
Test & Evaluation: 27C Integration Testing	1	2015	2	2016
Test & Evaluation: 27C Operational Testing	3	2016	1	2017
Test & Evaluation: H14 Integration Testing	2	2016	1	2018
Test & Evaluation: H14 Developmental Testing	4	2017	3	2018
Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Test & Evaluation: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: 29C Integration Testing	2	2016	4	2017
Test & Evaluation: 29C Operational Testing	1	2018	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 1662 / F/A-18 Improvement
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test & Evaluation: 31C Integration Testing	2	2018	4	2020
Deliveries: H10 Fleet Release	3	2016	3	2016
Deliveries: H12 Fleet Release	4	2017	4	2017
Deliveries: 27C Fleet Release	2	2017	2	2017
Deliveries: 29C Fleet Release	4	2018	4	2018
Deliveries: H14 Fleet Release	4	2019	4	2019
Deliveries: H16 Fleet Release	4	2021	4	2021
Deliveries: 31C Fleet Release	4	2020	4	2020
<i>Flight Plan Engineering</i>				
System Development: Hardware and Software Development	1	2015	4	2021
System Development: Modeling and Simulation	1	2015	4	2021
System Development: Studies and Analysis	1	2015	4	2021
Test and Evaluation: Developmental, Integration and Operational Testing	1	2015	4	2021
Deliveries: Software Fleet Release: H10 Fleet Release	3	2016	3	2016
Deliveries: Software Fleet Release: H12 Fleet Release	4	2017	4	2017
Deliveries: Software Fleet Release: 27C Fleet Release	2	2017	2	2017
Deliveries: Software Fleet Release: 29C Fleet Release	4	2018	4	2018
Deliveries: Software Fleet Release: H14 Fleet Release	4	2019	4	2019
Deliveries: Software Fleet Release: H16 Fleet Release	4	2021	4	2021
Deliveries: Software Fleet Release: 31C Fleet Release	4	2020	4	2020
<i>Test Wing Maintenance</i>				
Support: Test Wing Maintenance Support	1	2015	4	2021
<i>Obsolescence Redesign</i>				
System Development: F/A-18 Weapon System & Ancillary Equipment: Obsolescence Redesign Development & Testing	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons				Project (Number/Name) 2065 / F/A-18 Radar Upgrade			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2065: F/A-18 Radar Upgrade	708.949	3.033	15.022	13.926	-	13.926	9.197	7.117	8.911	8.916	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

F/A-18 Radio Detection and Ranging (RADAR) Upgrade: The F/A-18 RADAR Upgrade, Active Electronically Scanned Array (AESA) development program, which began in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series RADAR. The AESA system corrects operational test deficiencies noted in the AN/APG-73. It provides multi-target tracking, Synthetic Aperture RADAR (SAR) imagery, SAR Target Location Error (TLE), and improved spotlight map resolution. In addition, it provides greater lethality than previous F/A-18 RADARs by allowing full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons and it significantly increases A/A and A/G detection and tracking ranges. The AESA system provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy RADAR. This budget continues spiral capability development of AESA with increased efforts to address Phase II Operational Requirements Document requirements such as Counter-Electronic Attack(CEA) against multiple Radio Frequency Emitters, AESA Multi-Jammer Electronic Protection, Precision TLE Improvement, Monopulse and 5th/6th Channel development and Air Combat Maneuvering/Short Range Search and Track development and includes upgrades to RADAR Instrumentation, test and evaluation assets and threat assets, and upgraded modeling and simulation of both clean and Electronic Attack threat environments. Budget also supports development and testing of design modifications to address obsolescence issues with APG-65, APG-73 and APG-79 RADAR systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Distributed Targeting - CEA Software Development, Developmental Testing, Operational Testing, & Integration	2.973	9.954	12.691	0.000	12.691
Articles:	-	-	-	-	-
Description: Funding being utilized to support hardware (HW) and software (SW) capabilities development, integration and associated testing.					
FY 2015 Accomplishments: Continued HW and SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds program management and engineering support required for the APG-65/73-79 RADAR systems.					
FY 2016 Plans: Continue SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds program management and engineering support required for the APG-65/73-79 RADAR systems.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2065 / F/A-18 Radar Upgrade

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue HW/SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds program management and engineering support required for the APG-65/73-79 RADAR systems. Funds procurement of AESA test assets required at laboratories for test and development efforts. FY 2017 OCO Plans: N/A					
Title: F/A-18 RADAR Obsolescence Redesign Description: Develop and test design modifications to address obsolescence issues. FY 2015 Accomplishments: Developed and tested design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. FY 2016 Plans: Develop and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. FY 2017 Base Plans: Develop and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. FY 2017 OCO Plans: N/A	0.060	5.068	1.235	0.000	1.235
Articles:	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	3.033	15.022	13.926	0.000	13.926

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN/0143: EA-18G	1,503.534	858.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12,905.711
• APN/05250: F-18 Series Mod (OSIP 002-07)	68.571	91.620	148.268	-	148.268	247.603	219.230	244.512	168.342	72.061	2,088.581
• APN/0145: FA-18E/F	0.000	350.000	0.000	184.912	184.912	1,309.000	0.000	0.000	0.000	0.000	45,380.856

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2065 / F/A-18 Radar Upgrade
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The Active Electronically Scanned Array program continues developmental efforts following a successful Full Rate Production milestone decision, after completing a two-phase Acquisition approach during the FY1999 through FY2007 timeframe. This strategy continues utilization of reform initiatives such as: early partnering with industry; leveraging industry investment; optimizing use of Commercial Off-The Shelf software and Non-Developmental Item; using Cost as an Independent Variable; and Electronic Data Deliverables. Basic Ordering Agreement orders for Request for Proposal developments are in place for Boeing, the airframe prime manufacturer/integrator, and Raytheon, the Radio Detection and Ranging manufacturer, for focused risk reduction and sustainment of prior developmental activities.

E. Performance Metrics

Execute the system engineering process for software delivery and support the design and development of Electronic Protection, air to air, and air to ground capabilities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2065 / F/A-18 Radar Upgrade
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWCAD : Pax River, MD	3.912	0.953	Nov 2014	1.004	Nov 2015	2.180	Nov 2016	-		2.180	Continuing	Continuing	Continuing
CEA - Development/ Integration Counter Electronic Attack (CEA)	Various	NSMA : Arlington, VA	71.021	0.000		0.329	Dec 2015	0.382	Dec 2016	-		0.382	Continuing	Continuing	Continuing
Hardware-Obsolescence	MIPR	DMEA : Sacramento, CA	0.000	0.000		5.000	May 2016	1.165	May 2017	-		1.165	0.000	6.165	-
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	468.195	0.000		0.000		0.000		-		0.000	0.000	468.195	-
Subtotal			543.128	0.953		6.333		3.727		-		3.727	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development (Instrumentation)	WR	NAWCWD : China Lake, CA	39.031	0.352	Dec 2014	0.500	Dec 2015	0.250	Dec 2016	-		0.250	Continuing	Continuing	Continuing
Obsolescence Redesign	Various	Various : Various	0.060	0.060	Jun 2015	0.068	Mar 2016	0.070	May 2017	-		0.070	Continuing	Continuing	Continuing
Prior Year Support cost no longer funded in the FYDP	Various	Various : Various	2.027	0.000		0.000		0.000		-		0.000	0.000	2.027	-
Subtotal			41.118	0.412		0.568		0.320		-		0.320	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test	WR	NAWCWD : China Lake, CA	0.000	0.000		0.300	Dec 2015	0.300	Dec 2016	-		0.300	Continuing	Continuing	Continuing
AESA Radar Test Asset	C/FPIF	Raytheon : El Segundo, CA	0.000	0.000		6.000	Mar 2016	9.000	Mar 2017	-		9.000	0.000	15.000	15.000
Prior Year T&E cost no longer funded in FYDP	Various	Various : Various	110.808	0.000		0.000		0.000		-		0.000	0.000	110.808	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2065 / F/A-18 Radar Upgrade
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			110.808	0.000		6.300		9.300		-		9.300	-	-	-

Remarks
FY17 funding increases due to requirement for operational testing of software configuration sets and procurement of test assets for the Advance Weapons Lab(AWL).

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support (Seaport CSS)	C/CPFF	Wyle : Pax River, MD	7.500	0.543	Dec 2014	0.543	Dec 2015	0.414	Dec 2016	-		0.414	0.000	9.000	9.000
Contractor Engineering Support	Various	Various : Various	2.721	0.357	Nov 2014	0.500	Dec 2015	0.018	Dec 2016	-		0.018	0.000	3.596	-
Program Management Support	WR	NAWCAD : Pax River, MD	2.389	0.723	Nov 2014	0.723	Dec 2015	0.101	Dec 2016	-		0.101	0.800	4.736	-
Travel	Various	NAVAIR : Pax River, MD	1.285	0.045	Oct 2014	0.055	Nov 2015	0.046	Nov 2016	-		0.046	0.000	1.431	-
Subtotal			13.895	1.668		1.821		0.579		-		0.579	0.800	18.763	-

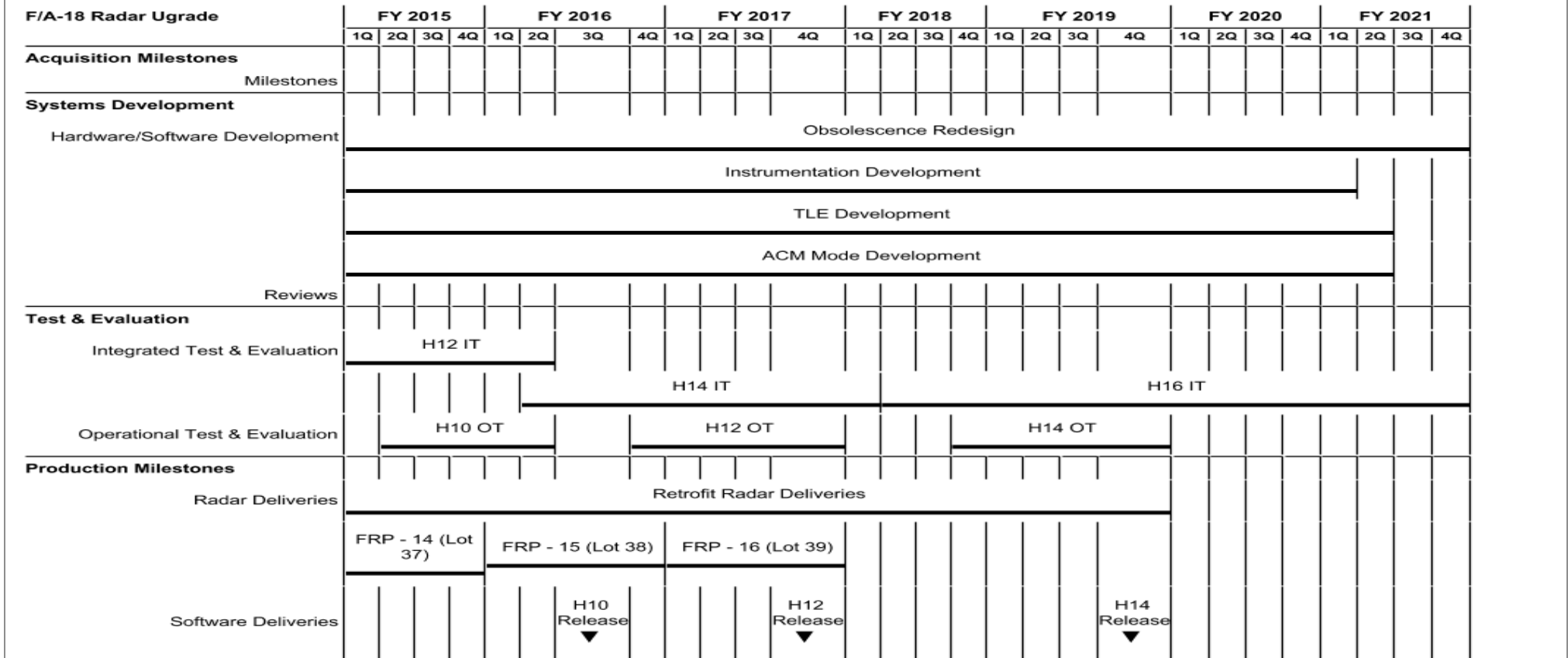
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		708.949	3.033	15.022	13.926	-	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2065 / F/A-18 Radar Upgrade
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2017PB - 0204136N - 2065

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>	Project (Number/Name) 2065 / <i>F/A-18 Radar Upgrade</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>F/A-18 Radar Upgrade</i>				
Systems Development: Hardware/Software Development: Obsolescence Redesign Development & Testing	1	2015	4	2021
Systems Development: Hardware/Software Development: Instrumentation Development	1	2015	1	2021
Systems Development: Hardware/Software Development: TLE Development	1	2015	2	2021
Systems Development: Hardware/Software Development: ACM Mode Development	1	2015	2	2021
Test & Evaluation: Integrated Test & Evaluation: H12 Integration Testing	1	2015	2	2016
Test & Evaluation: Integrated Test & Evaluation: H14 Integration Testing	2	2016	1	2018
Test & Evaluation: Integrated Test & Evaluation: H16 Integration Testing	2	2018	4	2021
Test & Evaluation: Operational Test & Evaluation: H10 Operational Testing	2	2015	2	2016
Test & Evaluation: Operational Test & Evaluation: H12 Operational Testing	4	2016	4	2017
Test & Evaluation: Operational Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Production Milestones: Radar Deliveries: Retrofit Radar Deliveries	1	2015	4	2019
Production Milestones: Radar Deliveries: FRP Deliveries B - 14 (Lot 37)	1	2015	4	2015
Production Milestones: Radar Deliveries: FRP Deliveries B - 15 (Lot 38)	1	2016	4	2016
Production Milestones: Radar Deliveries: FRP Deliveries B - 16 (Lot 39)	1	2017	4	2017
Production Milestones: Software Deliveries: H10 FLEET RELEASE	3	2016	3	2016
Production Milestones: Software Deliveries: H12 FLEET RELEASE	4	2017	4	2017
Production Milestones: Software Deliveries: H14 FLEET RELEASE	4	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons				Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2069: F/A-18 Infrared Search and Track (IRST)	0.000	0.000	0.000	107.313	-	107.313	84.180	74.232	53.835	54.912	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Not a New Start in FY17, previous work was conducted under project unit 1662.

A. Mission Description and Budget Item Justification

F/A-18 Infra-Red Search and Track (IRST): The F/A-18 E/F IRST system is a passive long-wave Infra-Red (IR) sensor which provides an alternate fire control system in a high Electronic Attack / Radio Detection and Ranging (RADAR) denied environment. Block II IRST upgrades the Infra-Red Receiver (IRR) and processor to provide full Capabilities Development Document (CDD) capability and enhanced warfighting capability through an improved engagement timeline, improved situational awareness, longer range passive detection and tracking and a larger field of regard with specification performance.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Infra-Red Search and Track (IRST)	0.000	0.000	107.313	0.000	107.313
Articles:	-	-	6	-	6
Description: Technology development and engineering and manufacturing development of an IRST sensor for the F/A-18 E/F. Block I supports technology development and engineering and manufacturing development of an IRST sensor for the F/A-18E/F to provide an alternate fire control system in a high Electronic Attack / Radio Detection and Ranging (RADAR) denied environment. Block II IRST upgrades the Infra-Red Receiver (IRR) and processor to provide full Capabilities Development Document (CDD) capability and enhanced warfighting capability through an improved engagement timeline, improved situational awareness, longer range passive detection and tracking and a larger field of regard with specification performance.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Develop and test design modifications to hardware components and software systems in response to obsolescence issues. Continue R&M ECP development, modernize Block I Engineering Development Model					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
(EDM) pods to upgraded R&M configuration, and conduct integration testing as required. Complete Block I IOT&E. Complete IRST Block II Technology Maturation and Risk Reduction. Conduct IRST Block II Preliminary Design Review. Begin IRST Block II Engineering and Manufacturing Development, procure six IRST Block II EDMs (RDT&E funded). Begin Block I EDM conversion to Block II configuration. Conduct Integrated Baseline Review for LRIP-3 and award LRIP-3 production contract (APN funded). FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	107.313	0.000	107.313

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/05250: F-18 Series Mod (OSIP 04-14)	69.815	110.584	110.920	-	110.920	104.393	129.011	150.230	165.000	781.777	1,621.730

Remarks

D. Acquisition Strategy
 Infra-Red Search and Track (IRST). The IRST program is a Navy program in the Production and Deployment phase. The IRST Block I system developed by the Navy will meet the requirements for a passive infrared alternate fire control solution capability. This capability will reach Initial Operational Capability (IOC) in FY 2019. The IRST Block II system will be developed by the Navy to provide the full Capability Development Document (CDD) capability. The IRST Block II system will IOC in FY2023.

E. Performance Metrics
 IRST Program achieved MS B on 17 June 2011, achieved MS C on 02 December 2014, and is scheduled for IOC in 1st Quarter of FY2019. IRST Block II systems are scheduled to begin production in FY2021 and IOC in FY2023.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Development (Hardware/Software) Infra-Red Search and Track (IRST)	Various	Boeing : St. Louis, MO	0.000	0.000		0.000		90.060	Dec 2016	-		90.060	206.813	296.873	-
Hardware Development	MIPR	USAF (MIT) : Hanscom AFB, MA	0.000	0.000		0.000		1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
Software (S/W) Development	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		1.871	Nov 2016	-		1.871	Continuing	Continuing	Continuing
Development Support	WR	NAWCAD : Lakehurst, NJ	0.000	0.000		0.000		0.218	Nov 2016	-		0.218	Continuing	Continuing	Continuing
Development Support	WR	FRC Southeast : Jacksonville, FL	0.000	0.000		0.000		0.917	Nov 2016	-		0.917	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		94.566		-		94.566	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.475	Nov 2016	-		0.475	Continuing	Continuing	Continuing
Development Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		2.209	Nov 2016	-		2.209	Continuing	Continuing	Continuing
Development Support	WR	NSWC : Indian Head, MD	0.000	0.000		0.000		0.060	Dec 2016	-		0.060	Continuing	Continuing	Continuing
Development Support	WR	NAWCWD : Pt. Mugu, CA	0.000	0.000		0.000		0.022	Dec 2016	-		0.022	Continuing	Continuing	Continuing
Obsolescence Redesign	Various	Various : Various	0.000	0.000		0.000		0.250	Dec 2016	-		0.250	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		3.016		-		3.016	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons				Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)							

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.889	Nov 2016	-		0.889	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		2.077	Nov 2016	-		2.077	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	OPTEVFOR : VX-9	0.000	0.000		0.000		4.050	Nov 2016	-		4.050	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E) - CSS	Various	OPTEVFOR : VX-9	0.000	0.000		0.000		0.247	Dec 2016	-		0.247	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	OPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.006	Nov 2016	-		0.006	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E) - CSS	Various	OPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.096	May 2017	-		0.096	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		7.365		-		7.365	-	-	-

Remarks

Test Assets (AIM-120) procured as live fire test assets in support of F/A-18E/F Improvements programs (IRST, MSI (SCS block builds)) and weapons integration efforts specific to the F/A-18.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	Various	NAVAIR : Patuxent River, MD	0.000	0.000		0.000		0.020	Oct 2016	-		0.020	Continuing	Continuing	Continuing
Program Management Support - MISC	Various	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		2.346	Oct 2016	-		2.346	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.000		2.366		-		2.366	-	-	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	0.000	0.000	0.000	107.313	-	107.313	-	-	-

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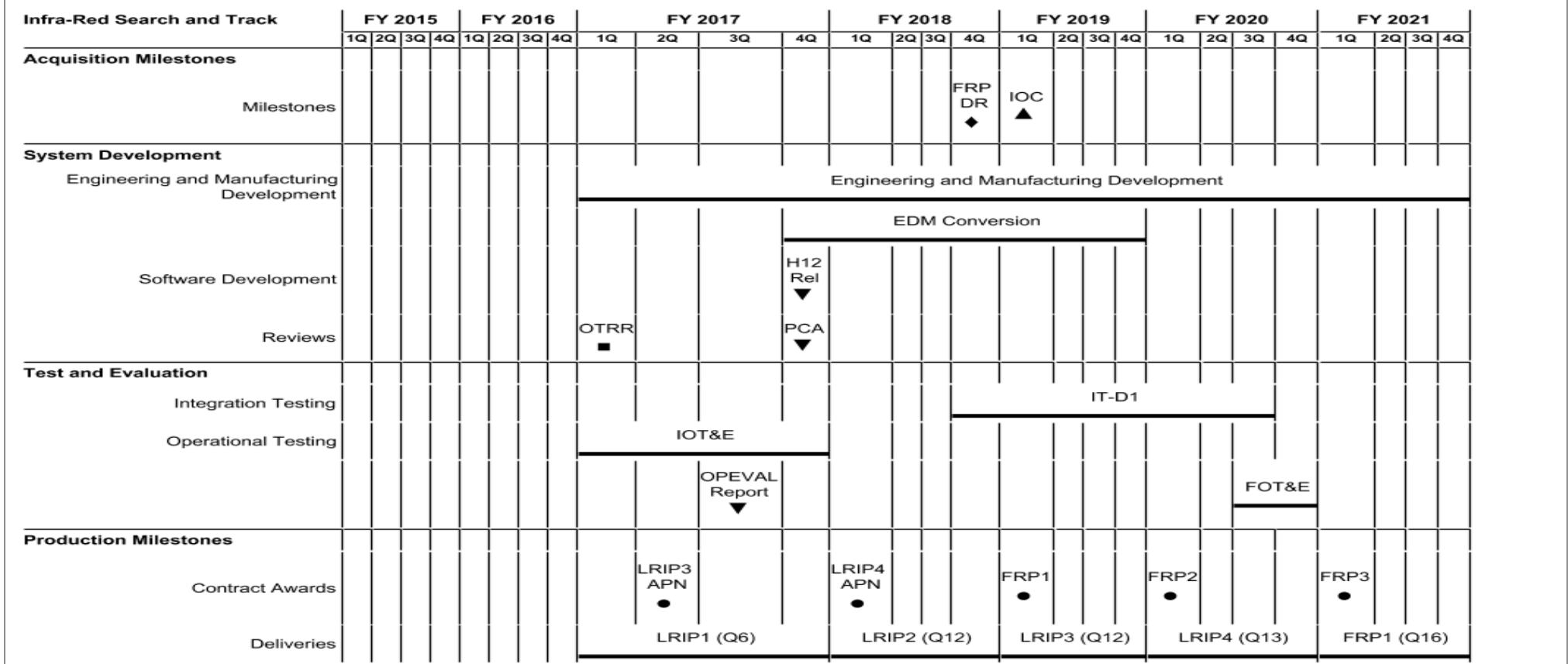
Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy							Date: February 2016			
Appropriation/Budget Activity 1319 / 7			R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons			Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks									

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)
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2017PB - 0204136N - 2069

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Infra-Red Search and Track				
Acquisition Milestones: Milestones: Full Rate Production Decision Review (FRP DR)	4	2018	4	2018
Acquisition Milestones: Milestones: Initial Operational Capability (IOC)	1	2019	1	2019
System Development: Engineering and Manufacturing Development: Engineering and Manufacturing Development	1	2017	4	2021
System Development: Engineering and Manufacturing Development: EDM Conversion	4	2017	4	2019
System Development: Software Development: H12 Fleet Release	4	2017	4	2017
System Development: Reviews: Operational Testing Readiness Review (OTRR)	1	2017	1	2017
System Development: Reviews: Physical Configuration Audit (PCA)	4	2017	4	2017
Test and Evaluation: Integration Testing: Integration Testing (IT-D1)	4	2018	3	2020
Test and Evaluation: Operational Testing: Integrated Operational Test & Evaluation (IOT&E)	1	2017	4	2017
Test and Evaluation: Operational Testing: OPEVAL Report	3	2017	3	2017
Test and Evaluation: Operational Testing: Follow-on Test & Evaluation (FOT&E)	3	2020	4	2020
Production Milestones: Contract Awards: LRIP 3 APN	2	2017	2	2017
Production Milestones: Contract Awards: LRIP 4 APN	1	2018	1	2018
Production Milestones: Contract Awards: FRP 1 Start	1	2019	1	2019
Production Milestones: Contract Awards: FRP 2 Start	1	2020	1	2020
Production Milestones: Contract Awards: FRP 3 Start	1	2021	1	2021
Production Milestones: Deliveries: LRIP 1 (Lot 1 - Qty 6)	1	2017	4	2017
Production Milestones: Deliveries: LRIP 2 (Lot 2 - Qty 12)	1	2018	4	2018
Production Milestones: Deliveries: LRIP 3 (Lot 3 - Qty 12)	1	2019	4	2019
Production Milestones: Deliveries: LRIP 4 (Lot 4 - Qty 13)	1	2020	4	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>	Project (Number/Name) 2069 / <i>F/A-18 Infrared Search and Track (IRST)</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Deliveries: FRP 1 (Lot 5 - Qty 16)	1	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons				Project (Number/Name) 9999 / Congressional Adds			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	9.868	11.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.368
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Add.

Research, Development, Test and Evaluation (RDT&E) funding to support the integration feasibility of the Brimstone II air-to-ground missile on the F/A-18E/F. This is the continuation of the Phase I assessment currently being conducted through funding provided in FY14. FY15 funding was for the continued qualification work and to assess software compatibility with the F/A-18E/F software configuration sets (SCS). Test and evaluation efforts are being conducted as required to qualify the missile to the Navy environment and to quantify missile performance. Brimstone II system functionality and response to stimuli will be measured in order to determine whether the missile is compatible with the F/A-18E/F in the current design. FY16 funding for continued qualification efforts.

Noise Reduction study conducted by the University of Mississippi National Center for Physical Acoustics (NCPA).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016
Congressional Add: Dual Mode Brimstone Integration	9.868	10.000
FY 2015 Accomplishments: FY15 Congressional Add funds will be used to continue qualification work and to begin assessing software compatibility between the Brimstone II system and the F/A-18E/F SCS. Data for previous United Kingdom Royal Air Force (RAF) airborne qualification and missile design data will be provided to NAVAIR Technical Area Experts (TAE'S) for analysis. The TAE's will determine data requirements based on this data.		
FY 2016 Plans: N/A		
Congressional Add: Noise Reduction	0.000	1.500
FY 2015 Accomplishments: N/A		
FY 2016 Plans: N/A		
Congressional Adds Subtotals	9.868	11.500

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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D. Acquisition Strategy

Not Required for Congressional Adds.

E. Performance Metrics

Not Required for Congressional Adds.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / F/A-18 Squadrons	Project (Number/Name) 9999 / Congressional Adds
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Brimstone-Systems Engineering	C/IDIQ	Various : Various	0.000	3.900	Aug 2015	10.000	Sep 2016	0.000		-		0.000	0.000	13.900	13.900
Subtotal			0.000	3.900		10.000		0.000		-		0.000	0.000	13.900	13.900

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Brimstone-Studies and Analysis	TBD	Various : Various	0.000	0.300	Aug 2015	0.000		0.000		-		0.000	0.000	0.300	-
Noise Reduction-Studies and Analysis	TBD	Mississippi : NCPA	0.000	0.000		1.500	Mar 2016	0.000		-		0.000	0.000	1.500	-
Subtotal			0.000	0.300		1.500		0.000		-		0.000	0.000	1.800	-

Remarks
Noise reduction study conducted by the University of Mississippi National Center for Physical Acoustics (NCPA).

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Development-Brimstone	Various	NAWCWD : China Lake, CA	0.000	1.000	May 2015	0.000		0.000		-		0.000	0.000	1.000	-
Test Articles-Brimstone	TBD	MBDA : Various	0.000	2.000	Oct 2015	0.000		0.000		-		0.000	0.000	2.000	-
Test DT/OT-Brimstone	Various	NAWCWD : China Lake, CA	0.000	2.000	May 2015	0.000		0.000		-		0.000	0.000	2.000	-
Subtotal			0.000	5.000		0.000		0.000		-		0.000	0.000	5.000	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / <i>F/A-18 Squadrons</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Dual Mode Brimstone Integration Test and Evaluation</i>				
Phase II - Lethality	2	2015	4	2017
Noise Reduction: Study and Analysis	2	2016	2	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	134.693	26.333	41.538	48.225	-	48.225	8.437	2.457	2.487	2.567	Continuing	Continuing
0725: <i>Communication Automation</i>	134.693	26.333	41.538	48.225	-	48.225	8.437	2.457	2.487	2.567	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Communications Automation Program - This project is a continuing program that provides for automation and communications upgrades for fleet tactical users. It includes Battle Force Tactical Network (BFTN), Joint Aerial Layer Network-Maritime (JALN-M), Automated Digital Network System (ADNS) and High Frequency Internet Protocol/Sub Network Relay.

The Battle Force Tactical Network (BFTN) on each surface, subsurface, air, or fixed US Navy platform utilizes previously installed/existing Line of Sight (LOS)/Extended Line of Sight (ELOS) radios (a.k.a. Radio Frequency (RF)) to create a secure gateway that inter-connects all users into a common RF Tactical Network (a.k.a. wireless). This Network separately supports US-Only and NATO Allied/Coalition users' tactical data information exchanges on each platform (node) between and/or across separately dispersed RF Networks even if Satellite Communications (SATCOM) channels to shore are lost during an Assured C2 and Anti-Access/Area Denial (A2/AD) event.

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially Anti-Access/Area Denial (A2/AD). With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document (ICD) and the JALN-M Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) waveform (Navy Multiband Terminal (NMT)) for intra-battle group DARE communications, a Common Data Link (CDL) waveform for the HCB cross-link capability, and will leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, Positioning, Navigation, and Timing (PNT) efforts related to the JALN-M Pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global Positioning System (GPS) connectivity. Because the Pod is being designed to operate in an A2/AD environment, the Pod HCB and XDR (NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data.

ADNS is the method by which Tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG). ADNS is the gateway to tactical Wide Area Network (WAN) afloat for Internet Protocol network operations, supporting information dissemination and external connectivity. ADNS allows services and applications to interconnect to the Defense Information Systems Network (DISN) ashore via multiple Radio Frequency (RF) resources and pier connectivity.

FY17 BFTN efforts will focus on the completion of the system integration package for BFTN engineering changes, completion of the active anti-jam sub-system Propagation Aware Automated Link Establishment/Automated Link Establishment Controller (PAALE/ALEC) and field test for hands-free automation, continuation of

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>
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the development and certification of digital multi-coupler which allows up to 4 radios to share a single antenna reducing top-side footprint, integration of shore global information grid (GIG) entry point (GIG/GEP) (non-permanent change), completion of ADNS INC III Service Pack 4, and certification of Information Assurance/ Computer Network Defense (IA/CND) of GEP design.

FY17 JALN-M efforts will focus on procurement, integration, and test of the Joint Aerial Layer Network-Maritime (JALN-M) end-to-end system in preparation of the pre-demo flight tests.

FY17, ADNS RDT&E investment will continue to support Interface Design Development (IDD) and integration with network applications, development of Line-Of-Sight (LOS) link, DISN integration, and development of Cipher-Text (CT) piers. Study efforts will continue with the intention of integrating ADNS into the JALN-M system. JALN-M is the Navy implementation that provides network connectivity in areas that have limited or denied Satellite Communications (SATCOM). ADNS system development will include addressing network management, intra and inter domain routing, Quality of Service (QoS), and Concept of Operations discussions. Continue Network-Based Cyber Security technology and virtualization to increase performance of the Navy's ADNS routing and transport architecture.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	27.039	62.867	51.221	-	51.221
Current President's Budget	26.333	41.538	48.225	-	48.225
Total Adjustments	-0.706	-21.329	-2.996	-	-2.996
• Congressional General Reductions	-	-0.329			
• Congressional Directed Reductions	-	-21.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.706	0.000			
• Rate/Misc Adjustments	0.000	0.000	-2.996	-	-2.996

Change Summary Explanation

Decrease in Fleet Tactical Development by \$2.0M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

In order to mitigate risk, JALN-M reduced the quantity of pod prototypes from 4 to 2. Additionally, the JALN-M demonstration originally planned for FY18 has been replaced with a series of flight tests .

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 I 7					R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>				Project (Number/Name) 0725 / <i>Communication Automation</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0725: <i>Communication Automation</i>	134.693	26.333	41.538	48.225	-	48.225	8.437	2.457	2.487	2.567	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

A. Mission Description and Budget Item Justification

The Battle Force Tactical Network (BFTN) on each surface, subsurface, air, or fixed US Navy platform uses previously installed/existing Line of Sight (LOS)/ Extended Line of Sight (ELOS) radios (a.k.a. Radio Frequency (RF)) to create a secure gateway that inter-connects all users into a common RF Tactical Network (a.k.a. wireless). BFTN enables war-fighters to digitally communicate NATO Allied/Coalition and US-Only information necessary to execute and plan in a real-time operational environment without relying on ashore application server interaction. This RF Network separately supports US-Only Carrier and Expeditionary Strike Group Commanders and maintains the digital communication ability to execute and plan with other U.S. ships, submarines or aircraft, as well as with NATO Allied/Coalition networks; even if Satellite Communication (SATCOM) channels to shore are lost.

In a satellite-denied event, adversaries covertly jam or disable communications necessary to Fleet protection and tactical operation. BFTN enhanced engineering changes will facilitate automation for operators ease of use, communications relays and application of network aware link establishment (NA-ALE) within/across battle groups. The BFTN engineering change will also enable size, weight and power (SWAP) modification of the existing BFTN Fly Away Kit for use in small platforms (i.e. surface, subsurface and manned/unmanned air platforms) which will also extend BFTN Ultra High Frequency/High Frequency (UHF/HF) link ranges. As a result, BFTN service levels can be extended for theatre of operations sufficient to thwart contested SATCOM connectivity to shore servers. Engineering studies and related test activities commenced in FY14 to support the goal of development and implementation of an engineering change for increased BFTN network data rates and link ranges (1.92Mbps - Ultra High Frequency (UHF) at 20nm or greater and 128Kbps - High Frequency (HF) at 200nm or greater), using either a single channel or quadrupling of system channel quantities for improved service, increased network performance and jam resistance in a satellite degraded/denied environment. Design enhancements will enable the BFTN network to self-assemble Transmission Control Protocol/Internet Protocol (TCP/IP) delivery circuits, adapt to user proximity changes due to maneuvers or operational demands and self-heal those data delivery circuits, if they are degraded or forcefully taken from afloat forces. These engineering changes will enhance ease of operators' use and mitigate obsolescence and end of life impacts associated with steady progression of network technology and architectures.

FY17 BFTN efforts will focus on the completion of the system integration package for BFTN engineering changes, completion of the active anti-jam sub-system Propagation Aware Automated Link Establishment/Automated Link Establishment Controller (PAALE/ALEC) and field test for hands-free automation, continuation of the development and certification of digital multi-coupler which allows up to 4 radios to share a single antenna reducing top-side footprint, integration of shore global information grid (GIG) entry point (GEP) (non-permanent change), completion of ADNS INC III Service Pack 4, and certification of Information Assurance/ Computer Network Defense (IA/CND) of GEP design.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially Anti-Access Area Denial (A2AD). With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document (ICD) and the JALN-M Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) waveform (Navy Multiband Terminal (NMT)) for intra-battle group DARE communications, a Common Data Link (CDL) waveform for the HCB cross-link capability, and will leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, Positioning, Navigation, and Timing (PNT) efforts related to the JALN-M Pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global Positioning System (GPS) connectivity. Because the Pod is being designed to operate in an A2AD environment, the Pod HCB and XDR (NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data.

FY17 JALN-M efforts will focus on procurement, integration, and test of the Joint Aerial Layer Network-Maritime (JALN-M) end-to-end system in preparation of the pre-demo flight tests.

Automated Digital Network System (ADNS) provides routing, switching, baseband, configuration and monitoring capabilities for interconnecting naval, coalition and joint enclaves worldwide. ADNS utilizes off the shelf equipment and network protocols as specified by the Joint Technical Architecture. ADNS INC III combines all Navy Tactical Voice, Secure Communications Interoperability Protocol (SCIP) Inter-Working Function, Video, and data requirements into a converged IP data stream. ADNS INC III supports higher bandwidth satellites, providing up to 25 mega bytes per second (Mbps) of throughput on Unit Level ships and up to 50 Mbps on Force Level ships. INC III architecture also incorporates an IPv4/IPv6 dual stack and Cipher-Text (CT) security architecture to align to the Global Information Grid (GIG) in order to mesh Navy Tactical surface, subsurface, and airborne platforms into a single IP environments with gateway functions to coalition and joint networks, in addition to greater security utilizing the High Assurance Internet Protocol Encryptor (HAIPE) devices. ADNS will serve as the Navy tactical interface for IP Networking for the JALN-M system. ADNS will investigate emerging technologies to integrate with additional Department of Defense C4I Programs to improve inter-strike group networking and extend the network to the tactical edge.

FY17 ADNS RDT&E investment will continue to support Interface Design Development (IDD) and integration with network applications, development of Line-Of-Sight (LOS) link, DISN integration, and development of CT piers. Study efforts will continue with the intention of integrating ADNS into the Joint Aerial Layer Network - Maritime (JALN-M) system. JALN-M is the Navy implementation that provides network connectivity in areas that have limited or denied SATCOM. ADNS system development will include addressing network management, intra and inter domain routing, QoS, and Concept of Operations discussions. Continue Network-Based Cyber Security technology and virtualization to increase performance of the Navy's ADNS routing and transport architecture.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Battle Force Tactical Network (BFTN)	7.752	12.699	5.354	0.000	5.354
Articles:	-	-	-	-	-
Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Continued to support the Integrated Testing and Operational Testing (IT/OT) event in support of a full rate production decision and resolve any developmental issues that are realized during the event. Continued to develop engineering documentation, initiated efforts in management of plans, logistics, currently fielded systems and develop solutions for end of life issues, obsolescence, and increase system ease of use for operators. Developed engineering documentation, initiated efforts in management of plans, logistics, and milestones and schedule to support efforts toward BFTN engineering change contract award. Awarded contract for modification and testing efforts of BFTN engineering change to overcome obsolescence issues which include: initiation of system sub-component miniaturization to reduce system weight and power parameters for ready integration into a broader range of platform configurations and support MIL-STD (Military Standard).</p> <p><i>FY 2016 Plans:</i> Begin BFTN engineering change development efforts. These efforts include completing the system integration package for BFTN engineering changes as back-fit and forward-fit configuration with associated engineering drawings, logistics and training. These efforts also include starting the active anti-jam sub-system Propagation Aware Automated Link Establishment/Automated Link Establishment Controller (PAALE/ALEC) and field test for hands-free automation, implementing component miniaturization to fit ships/subs and manned/unmanned aerial platforms. In addition, these efforts include shore integration of BFTN Global Information Grid Entry Point (non-permanent change) with cooperation of USN and USAF. Final lab testing of Automated Digital Network System (ADNS) INC III to/from BFTN to validate internet-working end to end compatibility. Complete certification of engineering changes at Common Submarine Radio Room, land-based submarine radio room and BFTN land-based test station.</p> <p><i>FY 2017 Base Plans:</i> Complete the system integration package for BFTN engineering changes as back-fit and forward-fit configuration with associated engineering drawings, logistics and training. Complete the active anti-jam sub-system PAALE/ALEC and field test for hands-free automation, implementing component changes to fit ships/subs and manned/unmanned aerial platforms. Integrate shore global information grid/gig entry point (GIG/GEP) (non-permanent change) with cooperation of USN and USAF. Complete ADNS INC III Service Pack interoperability and backward compatibility verification. Certify Information Assurance/ Computer Network Defense (IA/CND) of GEP design.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Title: Joint Aerial Layer Network -Maritime (JALN-M)	18.581	25.392	40.084	0.000	40.084

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Articles:	-	-	-	-	-
<p>Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.</p> <p>FY 2015 Accomplishments: Developed Joint Aerial Layer Network-Maritime (JALN-M) capabilities. Began development for Assured Position Navigation and Timing (PNT) subsystem and Position Reporting System (PRS). Facilitated the development of the design specifications of JALN-M payload requirements for integration into an airborne prototype pod. Continued developmental efforts with the Airborne Extended Data Rate (XDR) (Navy Multiband Terminal (NMT)) and High Capacity Backbone (HCB) waveforms, pod prototype, and Mobile Ground Entry Point (MGEP). Developmental efforts included requirements maturity and documentation and initial systems designs. Completed component and system of systems (SoS) System Design Review (SDR) and Preliminary Design Review (PDR).</p> <p>FY 2016 Plans: FY16 efforts includes procurement of the hardware for the two surrogate satellite prototypes. Continue design, development, integration and test of JALN-M end-to-end system. Complete component and system of systems (SoS) Critical Design Review (CDR). Begin pod assembly and subsystem integration and test of pods, three HCB systems, and Airborne XDR. Begin integration and installation of MGEP at NUWC for emulated CVN and emulated SSN. Continue Assured PNT subsystem integration and test with the pods. Delivery of production HCB systems for MGEP, and shipboard terminals. Continue Airborne XDR development. Complete PNT subsystem and PRS development, Complete design and integration of HCB ground systems, and equipment procurement for MGEP. Complete component integration of Topology Manager for airborne PRS and HCB systems. Additional efforts include planning activities and the development of systems engineering documentation in support of the JALN-M Pod flight tests.</p> <p>FY 2017 Base Plans: FY17 efforts include procurement, integration, and test of the Joint Aerial Layer Network-Maritime (JALN-M) end-to-end system in preparation for 30 flight tests. Complete component integration for Airborne XDR Deliver two pod prototypes and three HCB terminals. Begin system integration for pod prototypes, HCB, and Airborne XDR. Procure 14 radios for Position Reporting System (PRS)and continue system integration of PRS with shipboard systems and airborne payloads. Complete MGEP installation at Northwest Teleport and begin shipboard installations of Topology Manager on one aircraft carrier (CVN) and three Destroyer Guided Missiles (DDGs). Begin hardware and software installations of QNT radios on three DDGs and one CVN. Begin hardware and</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
software installations of HCB on one CVN. Begin Electromagnetic Interference (EMI) testing to determine topside equipment installation position for underway DDG. Complete Integration and Test Readiness Review (ITRR), Installation Readiness Review (IRR), and Pre-Demo Flight Readiness Review (RR).					
FY 2017 OCO Plans: N/A					
Title: Automated Digital Network System (ADNS)	0.000	3.447	2.787	0.000	2.787
Articles:	-	-	-	-	-
FY 2015 Accomplishments: FY15 and prior years funding resides under PE: 0303138N					
FY 2016 Plans: Continue testing and interfaces with Enterprise Network Management System (ENMS), IPv6 transition, and integration of Super High Frequency (SHF). Continue the Interface Design Development (IDD) and integration with network applications, develop Line-Of-Sight (LOS) link, Defense Information System Network(DISN) integration and development of Cipher-Text (CT) Piers. Investigate and recommend platform network devices, network design support to include procurement, integration and testing of the Wide Area Network (WAN) and Joint Aerial Layer Network-Maritime (JALN-M) system. Commence network-based Cyber Security technology and virtualizing ADNS. Complete Post Implementation Review (PIR) in support of Increment III Submarines.					
FY 2017 Base Plans: Continue testing and interfaces with ENMS, IPv6 transition, and integration of SHF. Continue the IDD and integration with network applications, develop LOS link, DISN integration and development of CT Piers. Investigate and recommend platform network devices, network design support to include procurement, integration and testing of the WAN and JALN-M system. Continue network-based Cyber Security technology and virtualizing ADNS.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	26.333	41.538	48.225	0.000	48.225

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/3057: <i>Battle Force Tactical Network (BFTN).</i>	1.425	4.068	3.706	-	3.706	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPN/3050: <i>Automated Digital Network System (ADNS)</i>	0.000	53.395	44.272	-	44.272	48.663	56.227	56.881	58.067	Continuing	Continuing
• OPN/2915: <i>CANES (ADNS Only)</i>	56.626	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	160.060

Remarks

Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

D. Acquisition Strategy

Battle Force Tactical Network (BFTN) will follow an evolutionary acquisition approach with collegial development across activities and coalesced implementation phases at accredited facility to achieve interoperable component upgrades, system integration and automated operations that optimize Fleet implementation. Program will use awarded OMNIBUS contracts to obtain engineering and support services consistent with acquisition initiatives. Development of BFTN engineering change enhancements leverages Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) products while expanding material savings by streamlining logistics, installation, integration and training concepts. Where feasible, differing types of advantageous contract vehicles will be used to provide flexibility, decrease contract administrative costs, and encourage acquisition streamlining through the use of COTS products.

Joint Aerial Layer Network-Maritime (JALN-M) will address capability gaps as directed by the JALN Analysis of Alternatives (AoA) by integrating a suite of technical capabilities into a single payload. Technical and acquisition support will be provided to conduct High Capacity Backbone (HCB) and Airborne Extended Data Rate (XDR) demonstrations and to develop six prototype JALN-M payloads.

Automated Digital Network System (ADNS): Evolutionary acquisition approach with overlapping development and implementation phases for defined INC I, II, and III baselines. INC I, II, and III will use competitively awarded contracts to implement changes consistent with acquisition initiatives. ADNS leverages Commercial-Off-The-Shelf (COTS) and Government Off-the-Shelf (GOTS) products while capitalizing on acquisition reform initiatives to achieve material savings in the logistics, installation, integration and training areas. Where feasible, differing types of advantageous contract vehicles will be used to provide flexibility, decrease contract administrative costs, and encourage acquisition streamlining through the use of COTS/GOTS products.

E. Performance Metrics

BFTN - Complete successful Initial Operational Test and Evaluation (IOT&E). Legacy UHF Radios Modified for Multichannel Wideband Interoperability Verified. Successful Electro Magnetic Compatibility/Electro Magnetic Interference (EMC/EMI) Test & Accreditation. Continue engineering changes for BFTN engineering change to increase individual High Frequency Internet Protocol (HFIP) channel data rates to 128Kbps and Ultra High Frequency Internet Protocol (UHFIP) to 1.9Mbps. Successful demonstration of engineering change over three (3) channels simultaneously, followed by successful demonstration of Spatial Multiplexing design over eight (8) channels simultaneously. Increased data rates for modem and controller are verified.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0204163N / <i>Fleet Tactical Development</i>	0725 / <i>Communication Automation</i>

ADNS - Included in the ADNS program goals are the improvements to bandwidth throughput, connectivity to multiple Radio Frequency (RF) paths, greater security, and system capability delivered within a smaller form factor. The ADNS program will, at a minimum, provide bandwidth throughput enhancements resulting in an increase from 2 megabytes per second (Mbps) to 25/50 Mbps. ADNS will also provide the ability to transport data across multiple paths simultaneously vice the current limitations of single or secondary paths. ADNS will provide greater security posture by encrypting each enclave, increase performance of the routing and transport architecture while reducing physical footprint and cost, and securing the core via Cipher-Text.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	Various	Various : Various	50.479	0.000		0.000		0.000		-		0.000	0.000	50.479	-
Systems Engineering-ADNS	WR	SSC : PAC/LANT	22.389	0.000		1.310	Dec 2015	0.959	Dec 2016	-		0.959	Continuing	Continuing	Continuing
Systems Engineering-ADNS	WR	NUWC : Newport, RI	1.864	0.000		1.136	Dec 2015	0.973	Dec 2016	-		0.973	Continuing	Continuing	Continuing
Primary Hardware Dev.-JALN-M	WR	NSWC : Panama City, FL	0.635	0.060	Nov 2014	0.000		0.000		-		0.000	0.000	0.695	-
Primary Hardware/Software - JALN-M	C/FFP	MIT/Lincoln Lab : Lexington MA	16.658	10.746	Nov 2014	21.251	Nov 2015	32.179	Nov 2016	-		32.179	Continuing	Continuing	Continuing
System Engineering JALN-M	C/CPFF	STF : San Diego,CA	0.901	1.126	Nov 2014	1.303	Nov 2015	2.064	Nov 2016	-		2.064	Continuing	Continuing	Continuing
System Engineering JALN-M	WR	SSC : PAC	1.321	0.606	Jan 2015	1.200	Jan 2016	1.111	Jan 2017	-		1.111	Continuing	Continuing	Continuing
System Engineering JALN-M	WR	NAWCAD : Patuxent River, MD	1.200	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Engineering BFTN	WR	SSC : PAC	0.971	0.813	Nov 2014	1.554	Nov 2015	0.895	Nov 2016	-		0.895	Continuing	Continuing	Continuing
Primary HW/SW Dev BFTN	WR	SSC : PAC	0.000	0.326	Dec 2014	0.055	Nov 2015	0.590	Nov 2016	-		0.590	Continuing	Continuing	Continuing
Primary Hardware Dev BFTN	C/FFP	Leidos : Sterling, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Engineering BFTN	WR	SSC : LANT JICF	0.129	0.000		0.347	Nov 2015	0.301	Nov 2016	-		0.301	Continuing	Continuing	Continuing
System Engineering BFTN	C/CPFF	STF : San Diego,CA	0.285	0.156	Nov 2014	0.235	Nov 2015	0.486	Nov 2016	-		0.486	Continuing	Continuing	Continuing
Primary Hardware BFTN	SS/CPIF	Metasoft : San Diego, CA	0.714	2.746	Jan 2015	4.254	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Primary HW Dev BFTN	C/CPFF	MAXCENTRIC : San Diego, CA	0.000	0.000		2.500	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Primary Software Dev BFTN	SS/BA	SSC : PAC	2.052	0.130	Nov 2014	1.388	Nov 2015	0.598	Nov 2016	-		0.598	Continuing	Continuing	Continuing
System Engineering BFTN	WR	SSC : LANT	0.268	0.244	Nov 2014	0.818	Nov 2015	0.960	Nov 2016	-		0.960	Continuing	Continuing	Continuing
Intergration and Test-ADNS	WR	SSC : LANT	0.000	0.000		0.553	Dec 2015	0.472	Dec 2016	-		0.472	Continuing	Continuing	Continuing
System Engineering BFTN	WR	SSC : PAC JICF	0.000	0.055	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0204163N / Fleet Tactical Development				0725 / Communication Automation							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering-ADNS	C/CPFF	BAH : San Diego, CA	0.000	0.000		0.310	Jan 2016	0.265	Jan 2017	-		0.265	Continuing	Continuing	Continuing
Subtotal			99.866	17.008		38.214		41.853		-		41.853	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support	Various	Various : Various	10.358	0.000		0.000		0.000		-		0.000	0.000	10.358	-
Studies and Analysis BFTN	WR	SSC : PAC	0.048	0.420	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Engineering BFTN	WR	SSC : PAC	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Documentation BFTN	C/CPFF	CSA : San Diego, CA	0.126	0.203	Nov 2014	0.388	Nov 2015	0.470	Nov 2016	-		0.470	Continuing	Continuing	Continuing
Documentation BFTN	C/CPFF	TASC : San Diego, CA	0.000	0.000		0.210	Nov 2015	0.470	Nov 2016	-		0.470	Continuing	Continuing	Continuing
Development Support - JALN-M	C/CPFF	BAH : San Diego	2.712	0.750	Dec 2014	0.550	Dec 2015	1.375	Dec 2016	-		1.375	Continuing	Continuing	Continuing
Development Support - JALN-M	C/CPFF	Mitre : San Diego, CA	0.541	0.300	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Support - JALN-M	WR	SSC : PAC	0.948	1.400	Oct 2014	0.623	Nov 2015	2.566	Nov 2016	-		2.566	Continuing	Continuing	Continuing
Development Support - JALN-M	C/CPFF	Linqest : San Diego, CA	0.000	0.300	Apr 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Financial Management Support - JALN-M	C/CPFF	Artemis : San Diego, CA	0.206	0.230	Oct 2014	0.275	Oct 2015	0.422	Oct 2016	-		0.422	Continuing	Continuing	Continuing
Documentation BFTN	C/CPFF	BAH : San Diego, CA	0.000	0.202	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Certification Authority-ADNS	C/CPFF	BAH : San Diego, CA	0.000	0.000		0.138	Jan 2016	0.118	Jan 2017	-		0.118	Continuing	Continuing	Continuing
Subtotal			14.939	3.805		2.184		5.421		-		5.421	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation	Various	Various : Various	14.512	0.000		0.000		0.000		-		0.000	0.000	14.512	-
Integration and Test BFTN	C/FFP	COMOPTEVOR : Norfolk, VA	0.497	0.248	Nov 2014	0.050	Mar 2016	0.060	Mar 2017	-		0.060	Continuing	Continuing	Continuing
Test and Evaluation Support BFTN	WR	SSC : PAC	0.000	1.047	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation Support BFTN	SS/CPFF	UCSD : San Diego, CA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test and Evaluation-JALN-M	C/CPFF	JHU/APL : Laurel, MD	1.400	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test and Evaluation-JALN-M	C/CPFF	MIT/Lincoln Lab : Lexington, MA	2.949	2.863	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation Support BFTN	WR	SSC : LANT	0.000	0.362	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			19.358	4.520		0.050		0.060		-		0.060	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support - BFTN	C/CPFF	BAH : San Diego, CA	0.330	0.800	Nov 2014	0.870	Nov 2015	0.524	Nov 2016	-		0.524	Continuing	Continuing	Continuing
Program Management Support JALN-M	C/CPFF	BAH : San Diego, CA	0.200	0.200	Nov 2014	0.220	Nov 2015	0.367	Nov 2016	-		0.367	Continuing	Continuing	Continuing
Subtotal			0.530	1.000		1.090		0.891		-		0.891	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	134.693	26.333	41.538	48.225	-	48.225	-	-	-

Remarks
Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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BFTN

Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones						◇ ADM		◇ ADM EC			◇ AS	◇ FRP-DR ◇ IOC																
Documents				◆ PLCCE		◇ APB						◇ CCA																
Test & Certification Events	◆ TEMP ◆ IATO				◆				Engineering Change Development							◇												
			◆					◇ DT/IT/OT																				
Logistics																												
Contracts		◆						◇ F/O PPSM																				
			Option Yr 3					Option Yr 4																				
Installation																												

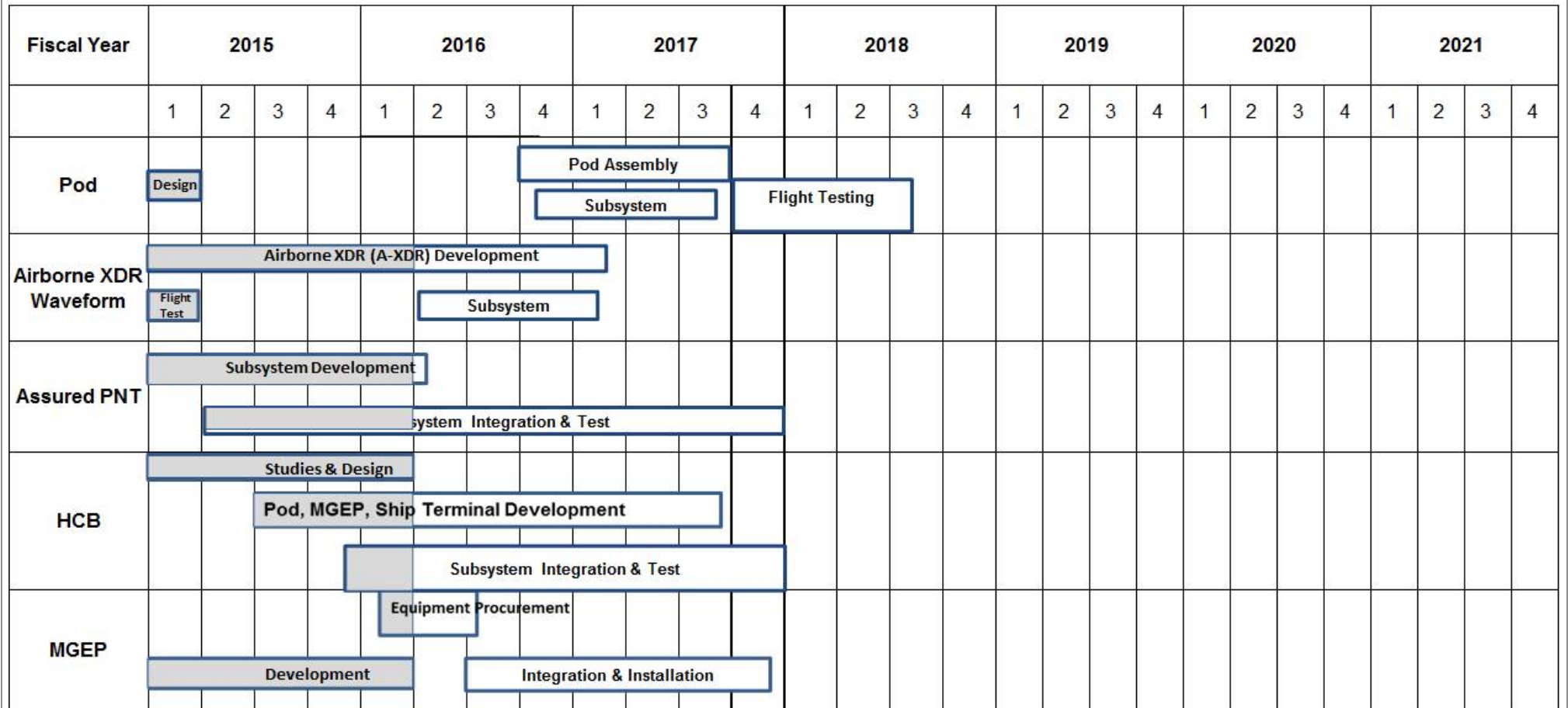
Notes: Schedule Shift due to changes in Acquisition Strategy

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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JALN-M Demonstration



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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ADNS																												
Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones						▲ PIR INC III Subs													▲ INC III ILA-S /PSR									
System Development	Note: FY15, ADNS funding resides under PE: 0303138N																											
	Interface Design Development & Integration with Network Applications and DISN																											
	Interface Design Development & Integration with Future SATCOM, JALN-M and Radio Frequency (RF) paths																											
Test & Evaluation Milestones																												
Operational Assessment (OA) Development Test Operational Test																												
Production																												
	Fielding & Sustainment INC III Surface																											
	Fielding & Sustainment INC III Subs																											
Deliveries																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
BFTN				
Acquisition Decision Memorandum (ADM)	2	2016	2	2016
Full Rate Production Decision Review (FRP DR) Baseline System	4	2017	4	2017
Initial Operational Capability (IOC) Baseline System	4	2017	4	2017
Engineering Change Development (Tech Refresh/Obsolescence)	1	2015	1	2016
Engineering Change Development	1	2016	4	2017
JALN-M				
Pod Design	1	2015	1	2015
Pod Subsystem Integration & Test	4	2016	3	2017
Pod Assembly	3	2016	3	2017
Pod Flight Testing	4	2017	3	2018
A-XDR Development	1	2015	1	2017
A-XDR Flight Test	1	2015	1	2015
A-XDR Integration & Test	2	2016	1	2017
PNT Subsystem Development	1	2015	2	2016
PNT Subsystem Integration & Test	2	2015	4	2017
HCB Studies & Design	1	2015	1	2016
HCB Pod, MGEP, Ship Terminal Development	3	2015	3	2017
HCB Integration & Test	4	2015	4	2017
MGEP Development	1	2015	1	2016
MGEP Equipment Procurement	1	2016	3	2016
MGEP Integration & Installation	3	2016	4	2017
ADNS				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204163N / <i>Fleet Tactical Development</i>	Project (Number/Name) 0725 / <i>Communication Automation</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acquisition Milestones: ADNS: Increment III_Subs Post Implementation Review	2	2016	2	2016
System Development: ADNS: Increment III_Interface Design Development and Integration with Network Applications and Defense Information Systems Network (DISN)	1	2016	4	2021
System Development: ADNS: Increment III_Interface Design Development and Integration with SATCOM, Joint Aerial Layer Network-Maritime (JALN) and Radio Frequency (RF) paths	1	2016	4	2021
Production: ADNS: Increment III_Fielding and Sustainment INC III Surface	1	2016	4	2021
Production: ADNS: Increment III_Fielding and Sustainment INC III Submarines	1	2016	4	2021
Production: ADNS: Increment III_Full Operational Capability	1	2021	1	2021
Acquisition Milestones: ADNS: Increment III Product Support Review	3	2019	3	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	8.611	3.000	36.045	21.156	-	21.156	13.529	14.554	12.421	12.749	Continuing	Continuing
3311: <i>Navigation Systems</i>	8.611	3.000	36.045	21.156	-	21.156	13.529	14.554	12.421	12.749	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Surface Support RDT&E funding will be used for the research, design, development, integration testing, and documentation of a new Inertial Navigation System (INS) for all Navy platforms. The program will implement systems engineering processes to investigate major navigation system error sources, define new functions, research new technologies, algorithms, and techniques to improve system performance, conduct analyses of alternatives, create preliminary and final design concepts, develop new hardware components and associated software, and conduct land based and shipboard testing. The INS-R consists of an Inertial Sensor Module (ISM) and a Navigation Processing Module (NPM). The ISM is planned to be designed, developed, and procured through an open competition. The NPM is a Government design. A Request for Information (RFI) was issued in 22 Aug 2013 for initial concepts and market availability of the ISM. The results of the RFI changed the FY16 and out requirements to complete development of all INS-R configurations (surface/amphib, submarine, and carrier).

The Navy's current INS is the AN/WSN-7(V) Ring Laser Gyro Navigator (RLGN), a legacy 1980's design that was first installed in 1998 and is now obsolete. This is a proprietary design. The RLGN is reaching its limit with respect to providing the high-accuracy navigation solution required to meet known and emerging mission requirements. Navigator of the Navy's Vision 2025 identified emergent requirements with respect to improved navigation in a GPS denied environment, littoral warfare, mine countermeasures, and manned and unmanned vehicle operations that cannot be met with existing systems. The RLGN employs an Inertial Measuring Unit (IMU) with three single-axis ring laser gyros that allow the system to provide continuous and automatic data outputs of the ship's geographic position (latitude, longitude), horizontal and vertical linear velocity (V_e, V_n, V_v), attitude (heading, roll, and pitch) and attitude rates. The INS provides mission critical ship's position and attitude data to shipboard sensors (such as radars), combat systems, gun, and missile systems. The INS uses data from the Global Positioning System (GPS) to periodically update (i.e., reset) its position and internal clock. The INS is the ship's primary position source in absence of GPS.

In addition to INS-R, this funding will be used for the research, development, integration testing, and documentation of other navigation wholeness initiatives, including Phase I Cybersecurity Enclave Boundary Defense Capability, MK27 Gyrocompass Replacement, Own Ship Speed (OSS) and Course Repeater Replacement, submarine Time Frequency Distribution System (TFDS) Replacement, and new submarine speed sensors. These efforts will provide replacement designs and architectures to address legacy obsolescence, capability gaps, and performance shortfalls that impact the quality, reliability, and total ownership costs of the overall navigation suite.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.878	36.045	24.918	-	24.918
Current President's Budget	3.000	36.045	21.156	-	21.156
Total Adjustments	0.122	0.000	-3.762	-	-3.762
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.179	0.000			
• SBIR/STTR Transfer	-0.057	0.000			
• Program Adjustments	0.000	0.000	-2.000	-	-2.000
• Rate/Misc Adjustments	0.000	0.000	-1.762	-	-1.762

Change Summary Explanation

FY 2015 funding request includes an increased of \$0.179 million for Navigation sensors and systems and reduction of \$0.057 million for SBIR Transfer.

FY 2017 funding request is reduced by \$0.321 million for rate/miscellaneous adjustments, \$2 million for Navigation Sensor and Tools adjustments, \$0.545 million to account for the availability of prior year balances, and \$0.896 million for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>				Project (Number/Name) 3311 / <i>Navigation Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3311: <i>Navigation Systems</i>	8.611	3.000	36.045	21.156	-	21.156	13.529	14.554	12.421	12.749	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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The Navy's current INS is the AN/WSN-7(V) Ring Laser Gyro Navigator (RLGN), a legacy 1980's design that was first installed in 1998 and is now obsolete. This is a proprietary design. The RLGN is reaching its limit with respect to providing the high-accuracy navigation solution required to meet known and emerging mission requirements. Navigator of the Navy's Vision 2025 identified emergent requirements with respect to improved navigation in a GPS denied environment, littoral warfare, mine countermeasures, and manned and unmanned vehicle operations that cannot be met with existing systems. The RLGN employs an Inertial Measuring Unit (IMU) with three single-axis ring laser gyros that allow the system to provide continuous and automatic data outputs of the ship's geographic position (latitude, longitude), horizontal and vertical linear velocity (Ve, Vn, Vv), attitude (heading, roll, and pitch) and attitude rates. The INS provides mission critical ship's position and attitude data to shipboard sensors (such as radars), combat systems, gun, and missile systems. The INS uses data from the Global Positioning System (GPS) to periodically update (i.e., reset) its position and internal clock. The INS is the ship's primary position source in absence of GPS.

In addition to INS-R, this funding will be used for the research, development, integration testing, and documentation of other navigation wholeness initiatives, including Phase I Cybersecurity Enclave Boundary Defense Capability, MK27 Gyrocompass Replacement, Own Ship Speed (OSS) and Course Repeater Replacement, submarine Time Frequency Distribution System (TFDS) Replacement, and new submarine speed sensors. These efforts will provide replacement designs and architectures to address legacy obsolescence, capability gaps, and performance shortfalls that impact the quality, reliability, and total ownership costs of the overall navigation suite.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Inertial Navigation System - Replacement (INS-R)	2.821	25.076	15.973	0.000	15.973
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Continued design and development of the surface and submarine variants of the NPM.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Completed NPM initial design for the test lab. - Completed Modeling and Simulation (M&S) for the Inertial Simulation Module (ISM) to support the NPM EDM. - Completed an Initial Design Review (IDR) on the NPM. - Released the ISM request for proposal to Industry for the ISM development, Low Rate Initial Production (LRIP) and Full Rate Production (FRP) contract. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue NPM Engineering Development Model (EDM) design. - Award the development contract for ISM development. - Complete Preliminary Design Review (PDR) for the ISM development. - Complete Preliminary Design Review (PDR) for the NPM development. - Build four ISM EDM's to support integration and testing - Integrate design of NPM and ISM and conduct an INS-R program level PDR. - Complete design documents to include the Systems Engineering Plan (SEP). - Deliver one NPM and one ISM simulator to CSEDS lab for testing. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Complete development of the ISM EDM. - Begin ISM EDM and NPM EDM hardware (HW) and software (SW) integration. - Complete the system test plans to support Developmental/Operational (DT/OA) testing. - Conduct Critical Design Review (CDR) on the ISM EDM, and NPM EDM. - Conduct CDR at the INSR system level. - Begin initial Vendor testing on the ISM EDM. - Award the ISM Pre Production Unit (PPU) Contract Line Item Number (CLIN) for production of ISM's. - Conduct Environmental Qualification Testing (EQT) on the NPM EDM. - Complete program documentation. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Phase I Cybersecurity Enclave Boundary Defense Capability</p> <p align="right">Articles:</p>	0.000 -	5.000 -	4.392 -	0.000 -	4.392 -
<p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Complete development, testing, and implementation of external boundary enclave cyber defense solutions. - Develop navigation wholeness Cybersecurity requirements based on mandated requirements, threats and standards via Functional Requirements Document (FRD). - Develop navigation architecture changes and Cybersecurity protections for current and future equipment. - Develop future Boundary Defense technologies to meet Advanced Cyber threats. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Design a Navy ECDIS cybersecurity solution for fielded unclassified configurations -Address firewall planning -Develop an architecture design for the Navigation Suite/Enclave for the layered boundary defense architecture -Develop requirements for shore to ship Navy Electronic Chart Display and Information System (ECDIS) software downloading procedures to ensure a robust cybersecurity posture. <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
<p>Title: MK27 Gyrocompass Replacement</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <p>N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Complete design, development, and testing of a MK27 gyrocompass replacement for surface, amphibious and submarine platforms leveraging the INS-R architecture. Includes build of three prototypes (one of each variant). <p>FY 2017 Base Plans:</p> <p>N/A</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>	0.000 -	3.400 -	0.000 -	0.000 -	0.000 -
<p>Title: Time Frequency Distribution System (TFDS) Replacement</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <p>N/A</p> <p>FY 2016 Plans:</p>	0.000 -	1.400 -	0.791 -	0.000 -	0.791 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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- Replace legacy Time Frequency Distribution System (TFDS) architecture on submarines with modern architecture. This leverages the development effort associated with the surface Time and Frequency Component (TFC) of Global Positioning System (GPS) - Based Positioning, Navigation, and Timing Service (GPNTS).

- Develop design documentation to adapt surface design to a submarine configuration and begin development of prototype.

FY 2017 Base Plans:
-Conduct the TFDS Analysis of Alternatives (AoA) to analyze options for meeting timing requirements for Submarines.
-Finalize the Technical Requirements Document (TRD).

FY 2017 OCO Plans:
N/A

Title: Own Ship Speed (OSS) and Course Repeater	0.000	0.722	0.000	0.000	0.000
Articles:	-	-	-	-	-

FY 2015 Accomplishments:
N/A

FY 2016 Plans:
- Complete design, development, and testing of an Own Ship Speed (OSS) and Course Repeater replacement for surface platforms. Includes build of two prototypes for testing.

FY 2017 Base Plans:
N/A

FY 2017 OCO Plans:
N/A

Title: Submarine Speed Sensors	0.000	0.447	0.000	0.000	0.000
Articles:	-	-	-	-	-

FY 2015 Accomplishments:
N/A

FY 2016 Plans:

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Test new shark fin and Doppler speed sensors for submarines using Commercial Off the Shelf (COTS) technology to replace legacy speed sensors. Effort will be used to guide future development of new speed sensor. Includes build of two prototypes for testing. FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: Assured Positioning, Navigation and Timing Analysis of Alternatives FY 2015 Accomplishments: Began Assured Positioning, Navigation and Timing Analysis of Alternatives (AoA). FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A	0.179	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	3.000	36.045	21.156	0.000	21.156

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/0670: <i>Other Navigation</i>	39.298	87.481	63.942	-	63.942	65.002	108.772	121.780	124.285	0.000	877.351

Remarks

D. Acquisition Strategy

Inertial Navigation System (INS) contract planned to be competitively awarded in FY 2016.

E. Performance Metrics

FY15:
- Completed the Inertial Simulation Module (ISM).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
<ul style="list-style-type: none"> - Continued design of NPM EDM. - Completed NPM initial design for the test lab. - Released the ISM development contract Request for Proposal. - Completed NPM design review. <p>FY16:</p> <ul style="list-style-type: none"> - Award ISM development contract. - Complete ISM component PDR. - Complete NPM component PDR. - Complete system level (INSR) PDR. - Build four ISM EDM's to support integration and testing - Deliver NPM EDM to CSEDS lab for initial testing. - Deliver ISM simulator to CSEDS lab for initial testing. - Complete INSR design documents including the SEP. - Doppler/Sharkfin speed sensor completed testing. - Complete FRD for Phase I Cybersecurity Enclave Boundary Defense Capability. - Build three prototype MK27 Gyrocompass Replacement. - Initiate TFDS prototype. - Build two prototype OSS and Course Repeaters. - Build two prototype Submarine Speed Sensors. <p>FY17:</p> <ul style="list-style-type: none"> - Complete development of the ISM EDM. - Begin ISM EDM and NPM EDM hardware (HW) and software (SW) integration. - Complete CDR for the ISM EDM and NPM EDM. - Complete system level CDR for the INSR. - Complete the system test plans to support Developmental/Operational (DT/OA) testing. - Complete the Program Protection Plan (PPP). - Complete Vendor Test Readiness Review (TRR). Begin Vendor testing. - Build one ISM PPU. - Start NPM EQT. - SCSC/CSEDS Navigation Unit (NU) deliveries - Consolidated Off Hull Assembly Test Site (COATS) NPM delivery 		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering/Design	WR	SPAWAR Atlantic : Little Creek, VA	3.136	0.315	Jan 2015	6.492	Dec 2015	3.880	Dec 2016	-		3.880	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	WR Systems : Norfolk, VA	2.447	0.766	Jan 2015	9.446	Dec 2015	6.640	Dec 2016	-		6.640	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	Penn State/ARL : Warminster, PA	1.591	0.429	Jan 2015	0.000	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	WR	NSWC Dahlgren : Dahlgren, VA	0.358	0.025	Jan 2015	0.068	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	Old Dominion University : Suffolk, VA	0.450	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	Contractor 1 TBD : TBD	0.000	0.000		15.675	Dec 2015	10.282	Jan 2017	-		10.282	Continuing	Continuing	Continuing
Systems Engineering/Design	WR	SPAWAR : Charleston, SC	0.000	1.200	Apr 2015	0.563	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	WR	SPAWAR : San Diego, CA	0.000	0.000		0.450	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	WR	NSWC/Carderock : Philadelphia, PA	0.000	0.000		0.450	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	TCNI : Middletown, MD	0.000	0.000		0.450	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	Northrop Grumman : Charlottesville, VA	0.000	0.000		0.225	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/Design	C/CPFF	Contractor 2 TBD : TBD	0.000	0.000		1.669	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			7.982	2.735		35.488		20.802		-		20.802	-	-	-

Remarks
 - Based on the responses from the 22 Aug 2013 issued Request for Information (RFI) for initial concepts and market availability of the ISM, additional funding to complete development of all INS-R configurations (surface/amphib, submarine, and carrier) has been added in FY16 and out.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	C/CPFF	TBD : TBD	0.629	0.265	Feb 2015	0.557	Dec 2015	0.354	Jan 2017	-		0.354	Continuing	Continuing	Continuing
Subtotal			0.629	0.265		0.557		0.354		-		0.354	-	-	-
Project Cost Totals			8.611	3.000		36.045		21.156		-		21.156	-	-	-

Remarks

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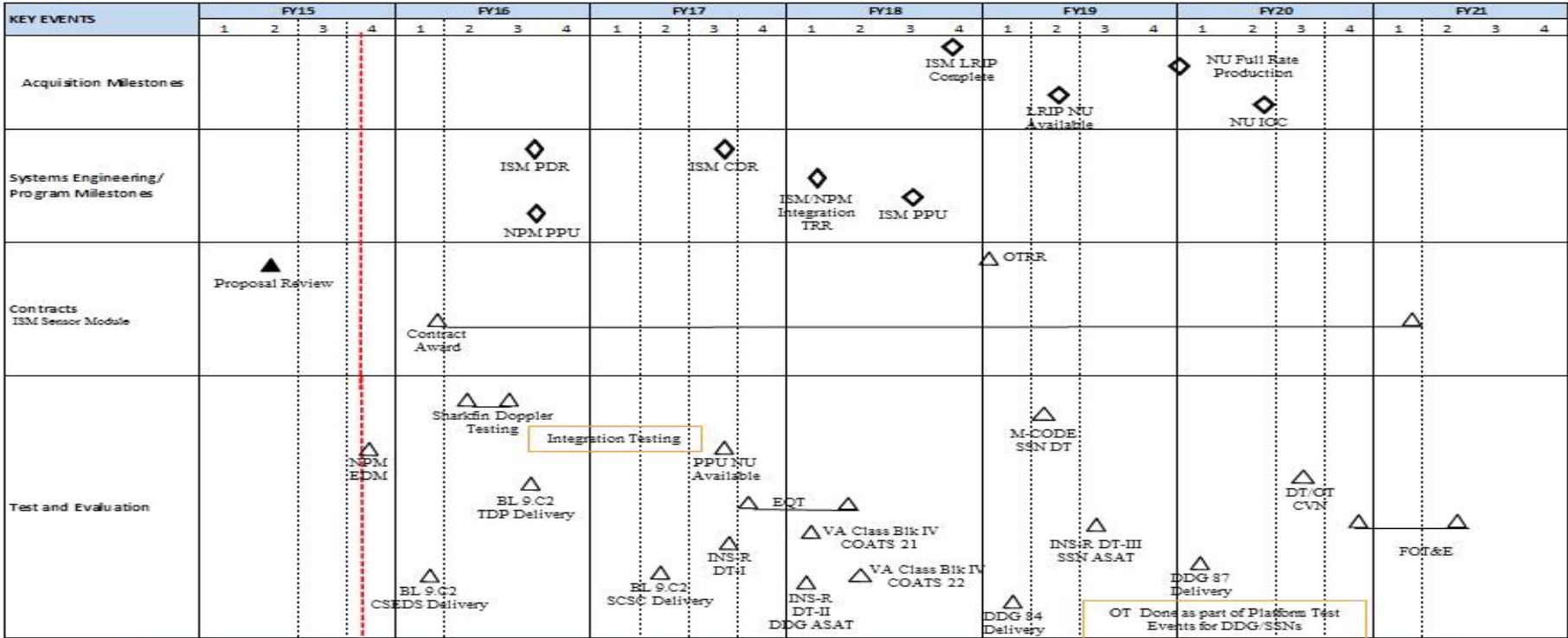
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0204228N / *Surface Support*

Project (Number/Name)
3311 / *Navigation Systems*



Acronym List		
ASAT: At-Sea Alignment Testing	INS-R: Inertial Navigation System-Replacement	PPU: Pre-Production Unit
CDR: Critical Design Review	IOC: Initial Operational Capability	RDT: Reliability Demonstration Test
CSEDS: Combat Systems Engineering Development Site	ISM: Inertial Sensor Module	SCSC: Surface Combat Systems Center
DT/OT: Development Test/ Operational Test	LRIP: Low Rate Initial Production	SOW: Statement of Work
EDM: Engineering Development Model	NPM: Navigation Processor Module	SS: Ship Set - consists of two NU
EQT: Engineering Qualification Test	NU: Navigation Unit, consist of two ISM and one NPM	SSN: Sub-Surface Navigation
FOT&E: Follow-On Test and Evaluation	OTRR: Operational Test Readiness Review	TDP: Technical Data Package
	PDR: Preliminary Design Review	TRR: Test Readiness Review

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3311				
ISM LRIP Complete	4	2018	4	2018
LRIP Navigation Unit (NU) Available	2	2019	2	2019
NU Full Rate Production (FRP)	1	2020	1	2020
NU IOC	2	2020	2	2020
ISM Preliminary Design Review (PDR)	3	2016	3	2016
NPM Pre-Production Unit (PPU)	3	2016	3	2016
ISM Critical Design Review (CDR)	3	2017	3	2017
ISM/NPM Integration Test Readiness Review	1	2018	1	2018
Operational Test Readiness Review	1	2019	1	2019
ISM Proposal Review	2	2015	2	2015
ISM Contract	1	2016	1	2021
NPM EDM	4	2015	4	2015
BL9C2 CSEDS Delivery	1	2016	1	2016
Sharkfin Doppler Testing	2	2016	3	2016
BL9C2 Technical Data Package (TDP)	3	2016	3	2016
BL9C2 SCSC Delivery	2	2017	2	2017
PPU NU Available	3	2017	3	2017
Environmental Qualification Testing (EQT)	4	2017	2	2018
Inertial Navigation System-Replacement (INS-R) Development Testing I (DT-I)	3	2017	3	2017
INS-R DT-II DDG At Sea Alignment Testing (ASAT)	1	2018	1	2018
VA Class Blk IV Consolidated Off Hull Assembly Test Site (COATS) 21	1	2018	1	2018
VA Class Blk IV COATS 22	2	2018	2	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204228N / <i>Surface Support</i>	Project (Number/Name) 3311 / <i>Navigation Systems</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DDG 84 Delivery	1	2019	1	2019
DDG 87 Delivery	1	2020	1	2020
M-Code SSN DT	2	2019	2	2019
INS-R DT-III SSN ASAT	3	2019	3	2019
DT/OT CVNs	3	2020	3	2020
Follow-on Test & Evaluation	4	2020	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	3,115.190	25.543	25.227	71.355	-	71.355	63.035	119.001	166.912	69.258	Continuing	Continuing
0545: <i>TOMAHAWK</i>	3,115.190	23.831	25.227	71.355	-	71.355	63.035	119.001	166.912	69.258	Continuing	Continuing
3378: <i>Next Generation Land Attack Weapon (NGLAW)</i>	0.000	1.712	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.712

Note

Funding for the Next Generation Land Attack Weapon has moved from Program Element 0204229N (Tomahawk Mission Planning Center) to 0604659N (Precision Strike Weapons Development Program) under the same Project Unit of 3378 effective FY 2016.

A. Mission Description and Budget Item Justification

Funds support development of the Tomahawk Weapon System (TWS) encompassing Tomahawk Land-Attack Missile (TLAM) upgrades, initiation of baseline improvements into the Block IV weapon system, Tactical Tomahawk Weapons Controls System (TTWCS), Tomahawk Mission Planning Center (TMPC) upgrades and other missile system improvements to maintain pace with threats. The TWS provides a Tomahawk cruise missile attack capability against fixed and mobile targets. Tomahawk is capable of being deployed from both submarines and surface ships. Launched from mobile, sea-based platforms, the land attack variant significantly increases the total capability of joint forces. This Program Element also includes initial funding for the NGLAW Capabilities Based Assessment(CBA) and Analysis of Alternatives (AoA) preparations.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Operational Systems Development because it includes development efforts to upgrade systems that have been fielded or have received approval for Full Rate Production (FRP) and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	26.145	25.228	40.764	-	40.764
Current President's Budget	25.543	25.227	71.355	-	71.355
Total Adjustments	-0.602	-0.001	30.591	-	30.591
• Congressional General Reductions	-	-0.001			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.602	0.000			
• Program Adjustments	0.000	0.000	1.942	-	1.942
• Rate/Misc Adjustments	0.000	0.000	28.649	-	28.649

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr
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Change Summary Explanation

Decrease in Tomahawk Mission Planning Center by \$1.49M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Technical: FY17 increase in funding will be used to continue Anti-Access/Area Denial (A2AD) navigation improvements and A2AD communication upgrade baseline improvements as well as incorporate an all-weather seeker into the Block IV Tomahawk Weapon System as part of the recertification of the Tactical Tomahawk (TACTOM).

Schedule:

PU-0545 A2AD OTRR moved from 4Q FY18 to 4Q FY19 due to further requirements definition of the Tomahawk Weapon System (TWS) as a part of the System Engineering Technical Review (SETR) process and refinement of the Modernization Integrated Master Schedule (IMS).

PU-0545 Added A2AD Interim Program Review 1 (IPR1) to 3Q FY16, A2AD IPR2 to 3Q FY17, A2AD IPR3 to 3Q FY18 as a part of the System Engineering Technical Review (SETR) process and refinement of the Modernization Integrated Master Schedule (IMS).

PU-0545 Added A2AD MOD Blk IV Fleet Release to 4Q FY20

PU-0545 Added TMPC 5.0.2 to 4Q FY17 to reflect Geospatial-Intelligence Agency (NGA) imagery format changes.

PU-0545 Added Seeker TTWCS Development to schedule 1Q FY17 through 4Q FY18 due to the requirement to incorporate an all weather multi-mode seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM).

PU-0545 Added Seeker TMPC Development to schedule 1Q FY17 through 4Q FY18 due to the requirement to incorporate an all weather multi-mode seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM).

PU-0545 Added Seeker AUR Development to schedule 2Q FY17 through 1Q FY20 due to the requirement to incorporate an all weather multi-mode seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM).

PU-0545 Added Seeker HWIL/LAB/Integration Testing to schedule 2Q FY17 through 4Q FY20 due to the requirement to incorporate an all weather multi-mode seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM).

PU-0545 Added Seeker System Test to schedule 2Q FY20 through 4Q FY21 due to the requirement to incorporate an all weather multi-mode seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	
<p>PU-0545 A2AD NAV moved from 1Q FY2015-4Q FY15 to 1Q FY15 to 4Q FY17 as a part of the System Engineering Technical Review (SETR) process and refinement of the Modernization Integrated Master Schedule (IMS).</p> <p>PU-0545 A2AD (NAV/COMMS) ECPs moved from 1Q FY2015-4Q FY2017 to 1Q FY2015 - 2Q FY2019 as a part of the System Engineering Technical Review (SETR) process and refinement of the Modernization Integrated Master Schedule (IMS).</p> <p>PU-0545 A2AD SRR moved from 2Q FY15 to 3Q FY15 to reflect actual date of completion.</p> <p>PU 3378- Removed FY16-FY20 schedule due to Next Generation Land Attack Weapon moving from Program Element 0204229N (Tomahawk Mission Planning Center) to 0604659N (Precision Strike Weapons Development Program).</p> <p>PU 3378 - Changed AoA Preps to Initial Capabilities Document (ICD) Staffing to accurately reflect pre-AoA activities.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0545: TOMAHAWK	3,115.190	23.831	25.227	71.355	-	71.355	63.035	119.001	166.912	69.258	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tomahawk Weapons System (TWS) provides a Tomahawk Land Attack Missile (TLAM) capability against fixed and mobile targets. This program ensures that the TWS exploits state-of-the-art technology to preserve the efficiency of this proven weapon system, and includes all missile development, mission planning system development, and submarine and surface ship weapons control system development.

The Tactical Tomahawk All-Up-Round (AUR) Block IV missile is a comprehensive spiral baseline upgrade to the TWS that provides the tactical commander a quick reaction response capability as well as improved flexibility, increased accuracy and higher lethality. A five-year multi-year (FY04-FY08) production contract was awarded in August 2004 for the production of up to 2200 Block IV Tomahawk missiles. The essential upgrades of the Block IV missile are: improved guidance, navigation, control and mission computer two-way satellite communications (SATCOM), and a lower production cost as compared to the Block III missile. Block IV provides a Ultra High Frequency SATCOM data link to enable the missile to receive in-flight mission modification messages, to transfer health and status messages and to broadcast Battle Damage Indication messages. Block IV also includes a high anti-jam Global Positioning System (GPS) receiver, navigation improvements and associated antenna systems. The Tomahawk program also includes development of continuing advances identified as spiral development under the Tomahawk Baseline IV Operational Requirements Document (ORD), to include development of the Joint Multiple Effects Warhead System/Joint Capability Technology Demonstration (JMEWS/JCTD).

The Theater Mission Planning Center (TMPC) consists of Commercial and Government Off-The-Shelf (COTS/GOTS) software and COTS hardware. TMPC provides targeting, mission planning, strike planning and execution, mission distribution, and operational employment capabilities for the Tomahawk Land Attack Missile (TLAM). Continuous TMPC software development decreases mission planning time and increases the quality and accuracy of each mission while reducing complexity. TMPC provides mission planning at the theater and operational levels and is designed for high rate mission planning production responsive to national strategic, operational, and tactical requirements. TMPC develops and distributes missions for the Tomahawk Missile; provides command information services for TWS; provides strike planning, execution, coordination, control and reporting, and provides Maritime Component Commanders (MCC) the capability to plan or modify conventional Tomahawk Land-Attack Missile (TLAM) missions. TMPC has evolved into scalable configurations deployed in four configurations at 180 sites: Cruise Missile Support Activities (CMSAs) (3+1 FMS), Tomahawk Strike Mission Planning Cells (TSMPCs) (3 - C5F, C6F, C7F), Carrier Strike Groups (CSGs) (16 - 10 CVN), Firing Units (FRUs) (84 Surface/56 Submarines), Fleet Training Sites and Labs (17). TMPC employment is major combat operations and Overseas Contingency Operations. TMPC was previously referred to as "The Tomahawk Command and Control System (TC2S)".

The TTWCS provides launch capability for surface and submarine platforms. Development of the TTWCS provides a common architecture to launch the TACTOM and all variants in inventory. Development of upgrades to the TTWCS is required to meet the Department of Defense Information Technology Standards Registry, to meet FORCEnet compliance and be Internet Protocol Version 6 ready in order to remain interoperable within the Joint Service Architecture and to retain weapons system viability and usability for our Sailors. These efforts provide battle-group tactical flexibility and responsiveness while maximizing TWS wartime capability.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Tactical Tomahawk All-Up-Round (AUR) and Tactical Tomahawk Weapons Control System (TTWCS)	14.741	21.682	58.128	0.000	58.128
Articles:	-	-	-	-	-
<p>Description: Continue Anti-Access/Area Denial (A2AD) navigation and communication integration into Block IV weapons system. Continue fleet experimentation and requirements coordination as well as Concept of Operations (CONOPS)/ Concept of Employment development. Incorporate an all-weather seeker into the Block IV Tomahawk weapon system to be incorporated as part of the recertification of the Tactical Tomahawk (TACTOM). Continuation of the cooperatively funded United States Navy/United Kingdom Joint Multi-Effects Warhead System (JMEWS) / Joint Capability Technology Demonstration (JCTD). Include significant research and analysis of the worldwide target set capability gaps to include Hard and Buried Targets and Prompt Global Strike targets, for which JMEWS is a potential solution. In addition, NAWCAD also provides engine power data/ analysis in order to determine reserve power available to power potential upgrades to the Tomahawk AUR, such as JMEWS.</p> <p>FY 2015 Accomplishments: Continue A2AD navigation and communications transition and engineering change proposals to include software development, systems engineering, system testing, and transition documentation. Continuation of JMEWS transition, integration, and demonstration efforts. Target assessments, engine performance analysis, campaign planning and mission analysis for potential Tactical Tomahawk upgrades or new applicable weapons. Non-recurring engineering, systems and software development, integration and testing of capability upgrades to address emergent threats, UONS, fleet gaps, and the Tomahawk ORD.</p> <p>FY 2016 Plans: Continuation of A2AD navigation and communications transition and engineering change proposals to include software development, hardware development, systems engineering, integration, system testing and transition documentation. Hardware development will include development and testing of either multiple or multi-band antennas, and continued development and testing of an integrated single box solution radio. Software development will include continued development and testing of Operationally Embedded Software for incorporation into the missile, as well as development of TTWCS for qualification testing. Update Tomahawk test and evaluation master plan. Continue JMEWS transition, integration, demonstration, and test efforts. Perform target and lethality assessments, engine</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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performance analysis to include high-speed engine feasibility studies and SBIRs, data-fusion studies, campaign planning and mission analysis for potential TACTOM upgrades or new applicable weapons. Continue participation in fleet experimentation and kill chain analysis. Perform Non-Recurring Engineering activities, systems and software development, integration and testing of capability upgrades to address emergent threats, UONS, fleet gaps, and the Tomahawk ORD as directed. Conduct activities ISO Speed to Fleet (S2F) Initiative for Synthetic Guidance IAW program plan. Effort includes Fleet coordination, development of Tactics, Techniques, and Procedures (TTPs), development of Concept of Operations/Concept of Employment (CONOPS/CONEMP), test support and conduct, and development and delivery of Joint Network-Enabled Weapons - Mission Management Capability (JNEW-MMC) terminals to potentially provide an early operational capability to the Fleet."

FY 2017 Base Plans:
Continuation of A2AD navigation and communications transition and engineering change proposals to include software and hardware final development, testing and deliveries of test equipment to supporting weapons control system laboratories; systems engineering reviews; integration, system testing and transition documentation. Hardware development will include development and testing of either multiple or multi-band antennas, testing of an integrated single box solution radio, and initial testing at missile segment level, integration and check out of test and support equipment at supporting labs, and identification/preliminary coordination of the test ship for TTWCS integration and testing. Software development will include continued development and testing of Operationally Embedded Software for incorporation into the missile, as well as development of TTWCS for qualification testing. Update Tomahawk test and evaluation master plan.

Commence activities in support of Enhanced Tactical Tomahawk. Effort includes development of system requirements, specifications, and interfaces; competitive prototyping of seeker suites by multiple contractors with support from the Prime; TTWCS, TMPC, and Missile software development; and lab and component-level testing. Additionally, coordinate with Fleet stakeholders to develop TTPs and CONEMPs/CONOPs, coordinate with Integrated Warfare Capability teams to develop ICTBs and assess kill-chains, and draft and submit a CDD Change Letter.

Continue JMEWS transition, integration, demonstration, and test efforts. Perform target and lethality assessments, engine performance analysis to include high-speed engine feasibility studies and SBIRs, data-fusion studies, campaign planning and mission analysis for potential TACTOM upgrades or new applicable weapons. Continue participation in fleet experimentation and kill chain analysis. Perform Non-Recurring

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Engineering activities, systems and software development, integration and testing of capability upgrades to address emergent threats, UONS, fleet gaps, and the Tomahawk ORD as directed.					
Conduct activities ISO Speed to Fleet (S2F) Initiative for Synthetic Guidance IAW program plan. Effort includes Fleet coordination, development of Tactics, Techniques, and Procedures (TTPs), development of Concept of Operations/Concept of Employment (CONOPS/CONEMP), test support and conduct, and development and delivery of Joint Network-Enabled Weapons - Mission Management Capability (JNEW-MMC) terminals to potentially provide an early operational capability to the Fleet.					
FY 2017 OCO Plans: N/A					
Title: Theater Mission Planning Center (TMPC)	9.090	3.545	13.227	0.000	13.227
Articles:	-	-	-	-	-
Description: Development and incorporation of new capabilities into the Theater Mission Planning Center (TMPC) necessary for the employment of the Tomahawk Weapon System (TWS).					
FY 2015 Accomplishments: Continue TLAM navigation and accuracy and weapons delivery Circular Error Probable (CEP) studies and assessments necessary to ensure the TWS is properly employed; continue evaluation of TMPC design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TMPC. Continue evaluation of imagery formats resulting from NGA mandated architectural changes. Continue the development of navigation software improvements capability and software code completion associated with A2AD navigation and communications integration and mission planning timeline upgrades. The majority of the development will occur in FY15.					
FY 2016 Plans: Continue TLAM navigation and accuracy and weapons delivery Circular Error Probable (CEP) studies and assessments necessary to ensure the TWS is properly employed; continued evaluation of TMPC design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TMPC. Continue evaluation of imagery formats resulting from NGA mandated architectural changes. Continue development of A2AD software for targeting and navigation improvements.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue TLAM navigation and accuracy and weapons delivery CEP studies and assessments necessary to ensure the TWS is properly employed; continued evaluation of TMPC design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TMPC. Continue evaluation of imagery formats resulting from Nationally mandated architectural changes. Complete development, coding and initial system integration and testing of Timeline Improvements and A2AD software for TMPC 6.0. TMPC 6.0 includes A2AD navigation and communications improvements required to support the Tomahawk Weapons System (TWS) Modernization program. Initiate seeker integration into the TMPC mission planning environment in support of the Enhanced Tactical Tomahawk.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	23.831	25.227	71.355	0.000	71.355

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• WPN/2101: <i>Tomahawk</i>	317.458	202.314	186.905	-	186.905	37.675	37.032	42.981	98.750	Continuing	Continuing
• OPN/5253: <i>Tomahawk Support Equipment</i>	60.062	71.245	71.046	-	71.046	72.855	72.318	72.477	73.972	Continuing	Continuing
• OPN/9020: <i>Initial and Vendor Direct Spares</i>	0.311	0.161	0.177	-	0.177	0.207	0.246	0.146	0.139	Continuing	Continuing

Remarks

D. Acquisition Strategy

The TACTOM Weapon System achieved IOC in May 2004. The acquisition strategy involves maintaining production through FY17 and entrance into recertification starting in FY19. Recertification of TACTOM missiles starting in FY19 provides modernization opportunities to improve weapon system performance. TMPC and TTWCS are in sustainment requiring periodic hardware and software updates to maintain compliance with IA standards and maintain system relevance against emerging threats. Sustainment of TMPC and TTWCS segments will rely on a blend of industry and government expertise through the remaining life of the program.

E. Performance Metrics

The Navy seeks to improve the Tomahawk cruise missile attack capability against land targets through research and development done predominantly through defense contractors and government field activities.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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Examples in the area of the All-Up-Round include development of candidate warheads and sensors that will enhance weapon ability to cover all assigned target types, provide a quick reaction response capability for the weapon system, and improved guidance, navigation, control, mission computer two-way satellite communications, and a high anti-jam GPS receiver all in line with state of the art technology.

In the area of the weapons control system, research and development is performed to ensure viability and usability of the system into the future, providing necessary upgrades to meet the Department of Defense Information Technology standards registry to comply with FORCEnet requirements and be Internet Protocol Version 6 ready to remain interoperable within Joint Service Architecture, in order to provide battle-group tactical flexibility and responsiveness needed to enable full wartime capability.

In the area of the TMPC, continue research and development in order to provide scalable configurations to deploy where and as needed to provide necessary command and control, development necessary to function with national and tactical imagery architectures, decrease mission planning time, and increase the quality and accuracy of each mission for the TWS.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering - Advanced Concepts A2AD Improvements (NAV/COMMS)	WR	NAWC-AD : Pax River, MD	0.240	0.069	Feb 2015	0.000		0.000		-		0.000	0.000	0.309	-
Systems Engineering - A2AD Improvements TDA (NAV/COMMS)	SS/CPFF	UARC APL : Laurel, MD	0.801	0.069	Feb 2015	0.000		0.000		-		0.000	0.000	0.870	0.873
Systems Engineering - A2AD Improvements Prime Integrator (NAV/COMMS)	SS/CPFF	Raytheon : Tucson, AZ	0.430	1.724	Feb 2015	8.084	Feb 2016	12.935	Feb 2017	-		12.935	10.731	33.904	30.987
Systems Engineering - TTWCS A2AD Improvements (NAV/COMMS)	WR	NSWC : Dahlgren, VA	0.939	0.532	Feb 2015	0.000		0.603	Feb 2017	-		0.603	Continuing	Continuing	Continuing
Systems Engineering - Hardware Development-A2AD Improvements (NAV/COMMS)	MIPR	NRO : Chantilly, VA	1.050	8.443	Feb 2015	12.076	Nov 2015	9.725	Nov 2016	-		9.725	5.474	36.768	35.517
Systems Engineering-TTWCS Software Support Activity(NAV/COMMS)	SS/CPFF	LMVF : Valley Forge, PA	0.000	0.400	Apr 2015	0.717	Apr 2016	2.276	Apr 2017	-		2.276	Continuing	Continuing	Continuing
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	2,660.256	0.000		0.000		0.000		-		0.000	0.000	2,660.256	-
Enhanced Tactical Tomahawk Seeker - TMPC	SS/CPFF	CommGlobal : San Jose, CA	0.000	0.000		0.000		1.617	Dec 2016	-		1.617	0.000	1.617	-
Enhanced Tactical Tomahawk Seeker - TMPC	SS/CPFF	Tapestry : St. Louis, MO	0.000	0.000		0.000		0.622	Dec 2016	-		0.622	0.000	0.622	-
Enhanced Tactical Tomahawk Seeker - TMPC	SS/CPFF	BAE Systems : San Diego, CA	0.000	0.000		0.000		1.444	Dec 2016	-		1.444	0.000	1.444	-
Enhanced Tactical Tomahawk Seeker - TMPC	SS/CPFF	Leidos : California, MD	0.000	0.000		0.000		2.316	Dec 2016	-		2.316	0.000	2.316	-
Enhanced Tactical Tomahawk Seeker - TMPC	SS/CPFF	URAC APL : Laurel, MD	0.000	0.000		0.000		0.052	Dec 2016	-		0.052	0.000	0.052	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enhanced Tactical Tomahawk Seeker - TMPC	WR	NAWC-AD : Pax River, MD	0.000	0.000		0.000		0.267	Nov 2016	-		0.267	0.000	0.267	-
Enhanced Tactical Tomahawk Seeker - TMPC	WR	NSWC-DD : Dahlgren, VA	0.000	0.000		0.000		0.172	Nov 2016	-		0.172	0.000	0.172	-
Enhanced Tactical Tomahawk Seeker	C/CPFF	Raytheon : Tucson, AZ	0.000	0.000		0.000		18.500	Dec 2016	-		18.500	0.000	18.500	-
Enhanced Tactical Tomahawk Seeker	SS/CPFF	UARC APL : Laurel, MD	0.000	0.000		0.000		0.500	Dec 2016	-		0.500	0.000	0.500	-
Enhanced Tactical Tomahawk Seeker	WR	NAWC-WC : China Lake, CA	0.000	0.000		0.000		0.500	Nov 2016	-		0.500	0.000	0.500	-
Enhanced Tactical Tomahawk Seeker	WR	NAWC-AD : Pax River, MD	0.000	0.000		0.000		0.500	Nov 2016	-		0.500	0.000	0.500	-
Enhanced Tactical Tomahawk Seeker	WR	NSWC-DD : Dahlgren, VA	0.000	0.000		0.000		6.510	Nov 2016	-		6.510	0.000	6.510	-
Subtotal			2,663.716	11.237		20.877		58.539		-		58.539	-	-	-

Remarks

Systems Engineering - A2AD Improvements Prime Integrator (NAV/COMMS)(Raytheon)- increase from FY16 to FY17 due to transition from antenna/harness development in FY16 to radio system integration in FY17 to the TACTOM AUR.

Systems Engineering- TTWCS Software Support Activity (NAV/COMMS) (LMVF)- increase from FY16 to FY17 due to transition between software coding/design and test phase in support of A2AD requirements.

Systems Engineering - Hardware Development (NRO)- A2AD Improvements (NAV/COMMS)NRO increase from FY16 to FY17 due to transition from sub-component development to full-up radio assembly and component level testing for compatibility with Tomahawk interfaces, Guidance Electronics Unit (GEU), and antenna.

Increase in FY17 for seeker due to requirement to incorporate an all-weather seeker into the Block IV Tomahawk Weapon System as part of the recertification of the Tactical Tomahawk (TACTOM).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	SS/CPFF	ComGlobal : San Jose, CA	0.357	1.686	Feb 2015	0.000		1.453	Feb 2017	-		1.453	Continuing	Continuing	Continuing
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	SS/CPFF	Boeing : St. Louis, MO	0.907	1.913	Feb 2015	0.000		1.031	Feb 2017	-		1.031	Continuing	Continuing	Continuing
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	SS/CPFF	BAE Systems : San Diego, CA	1.269	1.581	Feb 2015	0.000		0.237	Feb 2017	-		0.237	Continuing	Continuing	Continuing
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	SS/CPFF	Leidos : California, MD	1.871	1.370	Feb 2015	1.319	Feb 2016	1.115	Feb 2017	-		1.115	Continuing	Continuing	Continuing
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	SS/CPFF	UARC APL : Laurel, MD	2.164	0.459	Feb 2015	0.000		0.237	Feb 2017	-		0.237	Continuing	Continuing	Continuing
TLAM MP Analysis - Mission Planning	SS/CPFF	UARC APL : Laurel, MD	0.300	0.000		0.845	Feb 2016	1.059	Feb 2017	-		1.059	Continuing	Continuing	Continuing
Imagery Format Analysis - Mission Planning	SS/CPFF	Navy Sys Mgt Act : Arlington, VA	2.775	1.391	Feb 2015	1.164	Feb 2016	1.424	Feb 2017	-		1.424	0.000	6.754	6.754
A2AD Improvements (NAV/COMMS) - Mission Planning upgrade	WR	NAWC-AD : Pax River, MD	0.329	0.690	Feb 2015	0.217	Feb 2016	0.181	Feb 2017	-		0.181	Continuing	Continuing	Continuing
Development Support - TTWCS AUR	WR	NSWC : Dahlgren, VA	2.857	1.210	Feb 2015	0.050	Feb 2016	0.505	Feb 2017	-		0.505	Continuing	Continuing	Continuing
Development Support - Logistics AUR	WR	NSWC : Pt. Hueneme, CA	0.000	0.444	Feb 2015	0.000		0.000		-		0.000	0.000	0.444	-
Development Support - CSS AUR	SS/CPFF	Leidos : Arlington, VA	0.716	0.599	Feb 2015	0.224	Dec 2015	0.000		-		0.000	0.000	1.539	1.483
Development Support - Advanced Concepts AUR	WR	NAWC-WD : China Lake, CA	79.239	1.196	Feb 2015	0.050	Dec 2015	1.507	Feb 2017	-		1.507	Continuing	Continuing	Continuing
Development Support - AUR Fleet Representative	SS/CPFF	UARC APL : Laurel, MD	0.114	0.032	Feb 2015	0.034	Feb 2016	0.300	Feb 2017	-		0.300	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support - Advanced Concepts AUR	WR	NAWC-AD : Pax River, MD	0.345	0.023	Feb 2015	0.000		0.097	Feb 2017	-		0.097	Continuing	Continuing	Continuing
Development Support - CSS AUR	SS/CPFF	Various : PMA 280 Follow on CSS	0.000	0.000		0.447	Mar 2016	0.670	Dec 2016	-		0.670	Continuing	Continuing	Continuing
Prior Year Support cost no longer funded in FYDP	Various	Various : Various	274.418	0.000		0.000		0.000		-		0.000	0.000	274.418	-
Subtotal			367.661	12.594		4.350		9.816		-		9.816	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enhanced Tactical Tomahawk Seeker	C/CPFF	Raytheon : Tucson, AZ	0.000	0.000		0.000		2.000	Dec 2016	-		2.000	0.000	2.000	-
Enhanced Tactical Tomahawk Seeker	WR	NAWC-AD : China Lake, CA	0.000	0.000		0.000		0.500	Dec 2016	-		0.500	0.000	0.500	-
Enhanced Tactical Tomahawk Seeker	WR	NAWC-WD : Pax River, MD	0.000	0.000		0.000		0.500	Dec 2016	-		0.500	0.000	0.500	-
Prior Year T&E cost no longer funded in FYDP	Various	Various : Various	83.412	0.000		0.000		0.000		-		0.000	0.000	83.412	-
Subtotal			83.412	0.000		0.000		3.000		-		3.000	0.000	86.412	-

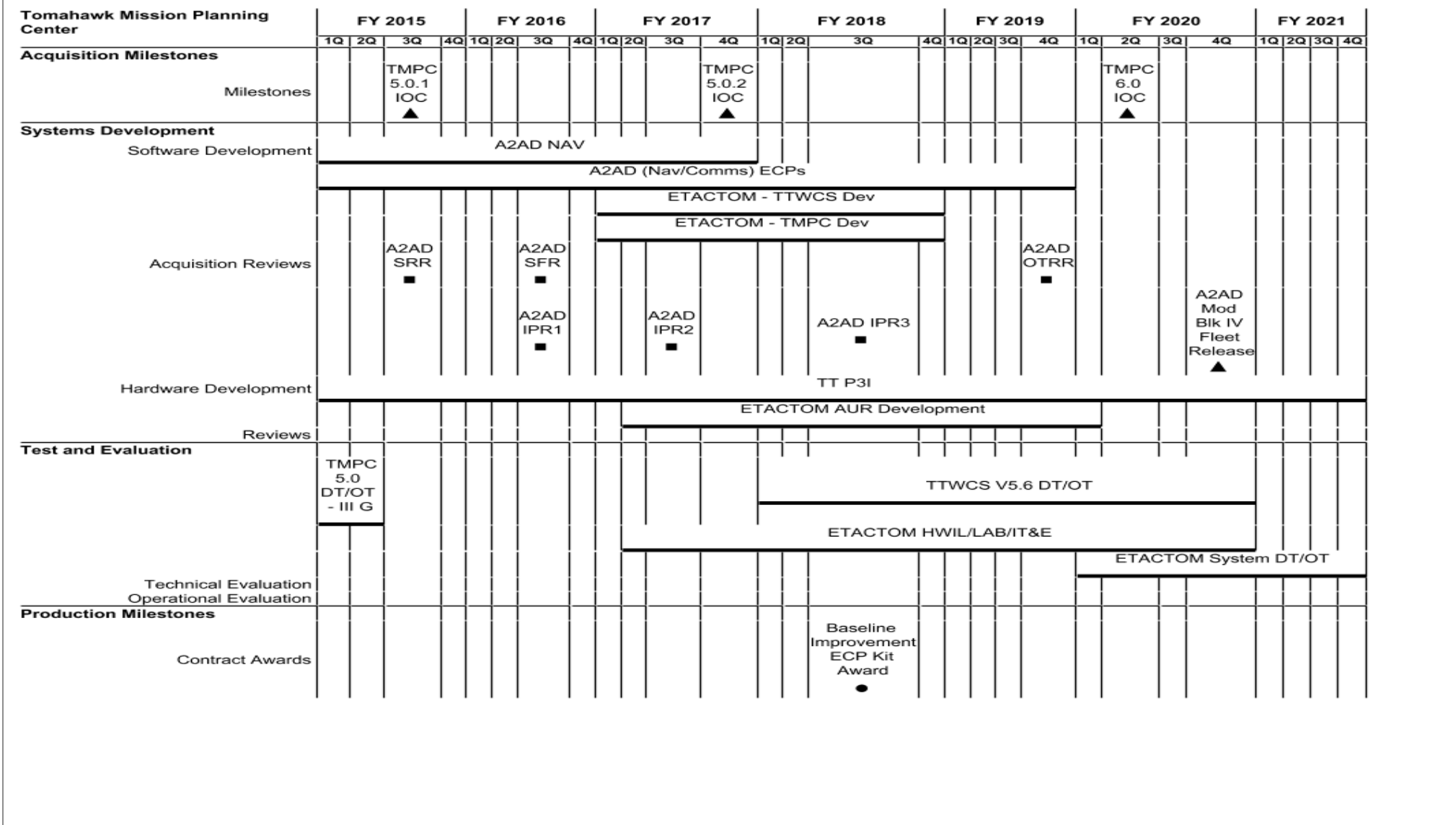
Remarks
Increase in FY17 for seeker due to requirement to incorporate an all-weather seeker into the Block IV Tomahawk weapon system to be integrated as part of the recertification of the Tactical Tomahawk (TACTOM).

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Mgmt cost no longer funded in FYDP	Various	Various : Various	0.401	0.000		0.000		0.000		-		0.000	0.000	0.401	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK
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TACTOM Baseline Improvement Deliveries		1st Modernized Missile Delivery
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr	Project (Number/Name) 0545 / TOMAHAWK

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Tomahawk Mission Planning Center				
Acquisition Milestones: Milestones: TMPC 5.0.1 IOC	3	2015	3	2015
Acquisition Milestones: Milestones: TMPC 5.0.2 IOC	4	2017	4	2017
Acquisition Milestones: Milestones: TMPC 6.0 IOC	2	2020	2	2020
Systems Development: Software Development: A2AD Navigation	1	2015	4	2017
Systems Development: Software Development: A2AD Navigation/Communications ECPs	1	2015	4	2019
Systems Development: Software Development: Enhanced TACTOM - TTWCS Development	1	2017	4	2018
Systems Development: Software Development: Enhanced TACTOM - TMPC Development	1	2017	4	2018
Systems Development: Acquisition Reviews: A2AD - SRR	3	2015	3	2015
Systems Development: Acquisition Reviews: A2AD- SFR	3	2016	3	2016
Systems Development: Acquisition Reviews: A2AD - OTRR	4	2019	4	2019
Systems Development: Acquisition Reviews: A2AD - IPR1	3	2016	3	2016
Systems Development: Acquisition Reviews: A2AD - IPR2	3	2017	3	2017
Systems Development: Acquisition Reviews: A2AD Modernization Blk IV Fleet Release	4	2020	4	2020
Systems Development: Acquisition Reviews: A2AD - IPR3	3	2018	3	2018
Systems Development: Hardware Development: TT Preplanned Product Improvement (P3I)	1	2015	4	2021
Systems Development: Hardware Development: Enhanced TACTOM - AUR Development	2	2017	1	2020
Test and Evaluation: TTWCS V5.6 Modernized Missile DT/OT	1	2018	4	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 0545 / TOMAHAWK
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test and Evaluation: TMPC 5.0 Test	1	2015	2	2015
Test and Evaluation: Enhanced TACTOM - HWIL/LAB/Integration Testing	2	2017	4	2020
Test and Evaluation: Enhanced TACTOM - System Testing	1	2020	4	2021
Production Milestones: Contract Awards: ECP Kit Award	3	2018	3	2018
Production Milestones: TACTOM Baseline Improvement Deliveries: 1st Modernized Missile Delivery	2	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204229N / Tomahawk Mssn Planning Ctr			Project (Number/Name) 3378 / Next Generation Land Attack Weapon (NGLAW)				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3378: Next Generation Land Attack Weapon (NGLAW)	0.000	1.712	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.712
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding for the Next Generation Land Attack Weapon has moved from Program Element 0204229N (Tomahawk Mission Planning Center) to 0604659N (Precision Strike Weapons Development Program) under the same Project Unit of 3378 effective FY 2016.

A. Mission Description and Budget Item Justification

Provides funding to support the Next Generation Strike Capability (NGSC) by funding Next Generation Land Attack Weapon (NGLAW); a surface/submarine fired survivable, long range, multi-mission, multi-platform conventional strike capability fielding in the 2028-2030 timeframe. The Next Generation Strike Capability (NGSC) strategy will address future threats in time to replace or update legacy weapons while bringing next generation technology to Department of the Navy (DoN) standoff conventional strike (Land Attack & ASuW). Within NGSC, NGLAW will be capable of attacking land and maritime, stationary and mobile targets while supporting two of the Navy's primary mission areas: 'Power Projection' (land attack from the sea/undersea) and 'Sea Control' against enemy surface action groups/combatants. To the maximum extent possible, NGSC will utilize common components and component technologies (e.g. navigation; communications; seeker; guidance and control) across the air-launched and sea-launched missile variants to reduce cost, shorten development timelines, and promote interoperability.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Next Generation Land Attack Weapon	1.712	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Conducted pre-AoA activities primarily consisting of conducting and staffing a Capabilities-Based Assessment (CBA) and submitting an Initial Capabilities Document for routing through both the Navy and Department of Defense. CBA work included an assessment of gaps and projected threats in both the long-range land attack and anti-surface warfare areas, followed by a recommendation for both material and non-material solutions to meet those gaps and threats.					
FY 2016 Plans: N/A					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 3378 / <i>Next Generation Land Attack Weapon (NGLAW)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.712	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• WPN/2101: <i>Tomahawk</i>	317.458	202.314	186.905	-	186.905	37.675	37.032	42.981	98.750	Continuing	Continuing
• OPN/5253: <i>Tomahawk Support Equipment</i>	60.062	71.245	71.046	-	71.046	72.855	72.318	72.477	73.972	Continuing	Continuing
• OPN/9020: <i>Initial and Vendor Direct Spares</i>	0.311	0.161	0.177	-	0.177	0.207	0.246	0.146	0.139	Continuing	Continuing

Remarks

D. Acquisition Strategy

Initiated AoA in FY15.

E. Performance Metrics

Obtained CBA and initiated ICD for NGLAW by the end of FY15.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 3378 / <i>Next Generation Land Attack Weapon (NGLAW)</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	WR	NAWC-WD : China Lake, CA	0.000	0.623	Feb 2015	0.000		0.000		-		0.000	0.000	0.623	-
Development Support	WR	NAWC-AD : Pax River MD	0.000	0.750	Feb 2015	0.000		0.000		-		0.000	0.000	0.750	-
Development Support	SS/CPFF	UARC APL : Laurel, MD	0.000	0.339	Apr 2015	0.000		0.000		-		0.000	0.000	0.339	1.000
Subtotal			0.000	1.712		0.000		0.000		-		0.000	0.000	1.712	-

Remarks
Decreases in FY15 due to internal realignment of funds from NGLAW to Tomahawk. No impact to the program, pre-AoA activities consisting of conducting and staffing a Capabilities-Based Assessment (CBA) and staffing the Initial Capabilities Document funded through the remainder of FY15.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.712	0.000	0.000	-	0.000	0.000	1.712	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 3378 / <i>Next Generation Land Attack Weapon (NGLAW)</i>
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Next Generation Land Attack Weapon	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
Milestones																												
				ICD Staffing																								
			MTB/CBA																									
			CBA ▼																									

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204229N / <i>Tomahawk Mssn Planning Ctr</i>	Project (Number/Name) 3378 / <i>Next Generation Land Attack Weapon (NGLAW)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Next Generation Land Attack Weapon</i>				
Acquisition Milestones: Milestones: ICD Staffing	3	2015	4	2015
Acquisition Milestones: Milestones: Mission Technical Baseline/Capabilities Baseline Assessment	2	2015	4	2015
Acquisition Milestones: Milestones: Capabilities-Based Assessment	4	2015	4	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	385.086	72.315	49.587	58.542	-	58.542	29.903	28.065	43.368	53.546	Continuing	Continuing
0344: <i>SUB AUXILIARIES</i>	3.671	0.811	0.843	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.325
0766.: <i>IUSS Detect/Classif System</i>	381.415	71.504	48.744	58.542	-	58.542	29.903	28.065	43.368	53.546	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) comprises two projects - 0766 and 0344. Project 0766 provides for Integrated Undersea Surveillance Systems (IUSS) Research and Development Projects under the Maritime Surveillance Systems (MSS) Program Office (PEO SUB PMS 485). IUSS provides the Navy with its primary means of submarine detection both nuclear and diesel. A portion of project 0766 (FSS) is classified, with details available at a higher classification level. Project 0344 funds the Shallow Water Surveillance System (SWSS) project to develop and demonstrate the technology to enable autonomous installation of a passive acoustic array with processing and communications gear.

The IUSS Research and Development project (0766) funds SURTASS Passive and SURTASS Low Frequency Active (LFA) developments. SURTASS provides the mobile, tactical arm of the Integrated Undersea Surveillance System, providing long range detection and cueing for tactical weapons platforms against both diesel and nuclear powered submarines. SURTASS LFA provides an active adjunct capability for IUSS passive and tactical sensors to assist in countering the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow quiet threats in harsh littoral waters.

In order to continue with reductions in life cycle costs and continue with system-wide consolidation, a short-term goal is to develop a common IUSS processor based on NAVSEA's Acoustic Rapid COTS Insertion (ARCI) program, with a cyclical tech refresh of hardware and software in conjunction with the submarine Advanced Processor Build (APB) process. The IUSS Integrated Common Processor (ICP) has the capability to process and display data from all fixed and mobile underwater systems. The IUSS ICP will be used for all new system installations and replace the legacy systems as they reach end of life and require upgrading. Additionally, SURTASS has consolidated on the TB-29A Twin-line array, a variant of the Submarine TB-29A Long line array. This reduced the number of array variants employed by SURTASS from 3 to 1, and enabled development and logistics cost savings by leveraging off the submarine TB-29A program.

In FY 15, funds were provided through ATR 15-24 PA to support the Navy's Theater Anti-Submarine Warfare (TASW) Offset strategy. Funds will support the rapid development, fielding, and evaluation of a prototype distributed and netted undersea sensor system to satisfy an urgent requirement of the combatant commanders for additional maritime intelligence, surveillance, and reconnaissance capabilities. This is a Navy new start MIP project.

In FY 17, the IUSS Research and Development project (0766) funds the second major increment to support the CNO's Theater Anti-Submarine Warfare (TASW) Offset Strategy. These funds are required for rapid development, fielding and evaluation of a prototype distributed and netted undersea sensor system to meet an urgent USEUCOM/USNORTHCOM/USSTRATCOM requirement for additional maritime Intelligence, Surveillance and Reconnaissance (ISR) capabilities. The system,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>
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comprised of elements developed by the Office of Naval Research (ONR), the Defense Advanced Research Projects Agency (DARPA) and the Naval Undersea Warfare Center (NUWC), will be integrated and demonstrated in an operationally relevant environment that addresses emergent real-world threats. This is a MIP project.

The Shallow Water Surveillance System (SWSS) project (0344) funds the development and demonstration of the Version 1 system with technology to enable autonomous classification and reporting of specific submarine targets of interest.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	34.471	54.218	26.160	-	26.160
Current President's Budget	72.315	49.587	58.542	-	58.542
Total Adjustments	37.844	-4.631	32.382	-	32.382
• Congressional General Reductions	-	-0.030			
• Congressional Directed Reductions	-	-4.601			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	37.844	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	33.498	-	33.498
• Rate/Misc Adjustments	0.000	0.000	-1.116	-	-1.116

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

Program Adjustments:

Increase of \$5.5M in FY15 is to support the Theater Anti-Submarine Warfare (TASW) initiative (BTR).

Increase of \$32.3M in FY15 is to support the Theater Anti-Submarine Warfare (TASW) initiative (OMNIBUS ATR).

Increase of \$29.6M in FY17 is to support the Theater Anti-Submarine Warfare (TASW) initiative.

Increase of \$3.7M in FY17 is to support SURTASS wholeness.

Proj. 0344:

Removed all existing SWSS development funding beginning in FY17 to fund higher priority investments during budget integration

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0344 / <i>SUB AUXILIARIES</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0344: <i>SUB AUXILIARIES</i>	3.671	0.811	0.843	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.325
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Shallow Water Surveillance System (SWSS) project (0344) funds the development and demonstration of the Version 1 system with technology to enable autonomous classification and reporting of specific submarine targets of interest.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SWSS	0.811	0.843	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: FY15 SWSS completed system integration test and conducted initial fully integrated system demonstration. Following system demonstration, system ruggedization testing and transition to manufacturing efforts were conducted.					
FY 2016 Plans: FY16 funding will be used to implement features for system ruggedization and reliability testing.					
FY 2017 Base Plans: Removed all existing SWSS development funding beginning in FY17 to fund higher priority investments during budget integration					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.811	0.843	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

Under Development

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0344 / <i>SUB AUXILIARIES</i>

E. Performance Metrics

SWSS Requirements Document has been developed. Details are available at a higher level of classification.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0344 / <i>SUB AUXILIARIES</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering Trade Studies	WR	SSC PAC : San Diego CA	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
Component Technology Risk Reduction Testing	WR	SSC PAC : San Diego CA	2.476	0.621	Nov 2014	0.000		0.000		-		0.000	0.000	3.097	-
Makai Development	SS/CPFF	Makai : Honolulu HI	0.195	0.190	Jan 2015	0.000		0.000		-		0.000	0.000	0.385	-
System Ruggedization and Reliability Testing	WR	SSC PAC : San Diego CA	0.000	0.000		0.543	Dec 2015	0.000		-		0.000	0.000	0.543	-
User Operational Evaluation	WR	SSC PAC : San Diego CA	0.000	0.000		0.300	Dec 2015	0.000		-		0.000	0.000	0.300	-
Subtotal			3.671	0.811		0.843		0.000		-		0.000	0.000	5.325	-
Project Cost Totals			3.671	0.811		0.843		0.000		-		0.000	0.000	5.325	-

Remarks
 Removed all existing SWSS development funding beginning in FY17 to fund higher priority investments during budget integration

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0344 / <i>SUB AUXILIARIES</i>
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Proj 0344	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
SWSS Demonstration																												
SWSS Ruggedization Testing																												
SWSS User Operational Evaluation #1																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0344 / <i>SUB AUXILIARIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0344				
SWSS Demonstration: System Demonstration	2	2015	3	2015
SWSS Ruggedization Testing: Ruggedization Testing	4	2015	3	2016
SWSS User Operational Evaluation #1: SWSS User Operational Evaluation #1	4	2016	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>				Project (Number/Name) 0766. / <i>IUSS Detect/Classif System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0766.: <i>IUSS Detect/Classif System</i>	381.415	71.504	48.744	58.542	-	58.542	29.903	28.065	43.368	53.546	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The increase in funding from FY16 to FY17 is due to completing and deploying TASW systems to meet urgent need.

A. This project includes efforts for SURTASS. The SURTASS project comprises the mobile, tactical arm of the Integrated Undersea Surveillance System, providing long range detection and cueing for tactical weapons platforms against both diesel and nuclear powered submarines. SURTASS also provides the undersea surveillance necessary to support regional conflicts and sea-lane protection. SURTASS has experienced recent passive and active success against diesel submarines operating in shallow water. SURTASS is leveraging existing developments and reducing costs by using Non-Developmental Items and commercial hardware, supporting common Navy Undersea Warfare processing and towed array developments, and increasing operator efficiency through computer-aided detection and classification processing. SURTASS development efforts include LFA improvements, common IUSS processing, twin-line array development and processing, improved detection and classification/passive automation to counter quieter threats, additional signal processing, integrated active and passive operations, improved Battle Group support, and improved information processing.

LFA provides an active adjunct capability for IUSS passive and tactical sensors to counter the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow, quiet threats in harsh littoral waters. Improvements include TL-29A/LFA integration enhancements, advanced waveforms for littoral/shallow water operations including Doppler sensitive waveforms, and processing algorithms to reduce clutter and reverberation false alarms in shallow water. The LFA task includes development and testing of a compact LFA transmit source array for SWATH-P ships, and upgrade of LFA processing capability in the IUSS Integrated Common Processing (ICP) architecture. The ICP is a derivative of the NAVSEA Submarine Acoustic Rapid COTS Insertion (ARCI) program, and is being augmented for IUSS requirements. Together, the LFA improvements, TL-29A, and the ICP support the SURTASS Active Improvement Program.

Functional improvements are delivered to the Fleet in software "builds" while hardware improvements are delivered through the Tech Insertion (TI) process. Software improvements delivered via the Advanced Surveillance Build (ASB) process are based on the Advanced Processor Build (APB) process begun by the NAVSEA Submarine USW program. Each ASB will introduce new capabilities into SURTASS systems including improved automation, normalizer techniques, adaptive beam forming, and display enhancements. SURTASS participates in the process by contributing algorithms for consideration, supplying peer group members for review of candidate algorithms, participating in test evolutions, and incorporating improved algorithms into operational systems. The TI process, modeled after the NAVSEA Submarine USW hardware improvement program, delivers processing technology improvements to platforms on roughly a 4-year cycle. Hardware upgrades for active and passive arrays and communications systems will also be provided during TI upgrades, but not on a regular planned development cycle as for the processing upgrades.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

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B. PEO SUB is involved with the development and maintenance of various IUSS systems. These systems include FDS, FDS-C, and SURTASS. The near-term goal is development of ICP, which will result in a single IUSS processor baseline, with minor maintenance efforts continuing on fielded systems. The existing system architecture, signal processing, contact management, and reporting requirements will be evaluated as well as the requirements for future systems. The development of the ICP will take advantage of automation advancement, array technology improvements, along with IUSS, submarine, and surface USW system commonality. The FSS portion of 0766 is classified with details available at a higher classification level.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Integrated Common Processor (ICP)	9.633	9.807	13.866	0.000	13.866
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Developed operator automation to allow operator to more quickly detect targets of interest. Specific focus on compensating for array shape in a ship maneuver as well as system improvements to alert the operator of potential targets of interest in both the active and passive realms.					
Developed software to implement technology refresh for SURTASS ships as well as in support of the Integrated Undersea Surveillance Systems' (IUSS) Advanced Surveillance Build (ASB) in coordination with the Submarine Acoustic Rapid Commercial Off The Shelf (COTS) Insertion (ARCI) program Advanced Processor Build (APB). Addressed processing improvement recommendations and deficiencies associated with CLFA DT/OT and LFA FOT&E.					
FY 2016 Plans:					
Continue development of operator automation to allow operator to more quickly detect targets of interest. Specific focus on compensating for array shape in a ship maneuver as well as system improvements to alert the operator of potential targets of interest in both the active and passive realms.					
Continue to develop software to implement technology refresh for SURTASS ships as well as in support of the Integrated Undersea Surveillance Systems' (IUSS) Advanced Surveillance Build (ASB) in coordination with the Submarine Acoustic Rapid Commercial Off The Shelf (COTS) Insertion (ARCI) program Advanced Processor Build (APB).					
Continue to address processing improvement recommendations and deficiencies associated with CLFA DT/OT and LFA FOT&E.					
Update processing to provide seamless integration of active/passive processing to support geo-centric contact-based search.					
Investigate methods to reduce surface ship clutter in order to enhance detection performance.					
Support technical insertion hardware replacement to enhance ICP surveillance capability.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Develop advanced Undersea Warfare (USW) sensor technology and associated processor and Advanced Surveillance Build (ASB) processing. These enhanced capabilities are necessary to meet Key Performance Parameters against adversary's advanced submarines. Both processing and sensors are required to detect increasingly quiet threats in a cluttered environment with the emerging situation of insufficient numbers of qualified Fleet operators available to staff these CNO high priority systems that result in the requirement for increased focus on operator workload reduction and processing capability enhancement/ development as well as increased sensitivity of sensors.</p> <p>Continue to investigate methods to reduce surface ship clutter in order to enhance detection performance. Continue to support technical insertion hardware replacement to enhance ICP surveillance capability.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Compact Low Frequency Active</p> <p align="right">Articles:</p>	1.500 -	1.750 -	2.000 -	0.000 -	2.000 -
<p>FY 2015 Accomplishments: Developed product improvements and corrections associated with CLFA DT/OT and LFA FOT&E. Conducted at-sea testing of product improvements.</p> <p>FY 2016 Plans: Continue product improvement and upgrade efforts associated with CLFA DT/OT and LFA FOT&E. Conduct pierside and at-sea test and evaluation efforts to research alternative LFA/CLFA system performance enhancements.</p> <p>FY 2017 Base Plans: Continue product improvement and upgrade efforts associated with CLFA DT/OT and LFA FOT&E. Conduct pierside and at-sea test and evaluation efforts to research alternative LFA/CLFA system performance enhancements.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: TB-29A/Twin-Line</p> <p align="right">Articles:</p>	1.500 -	1.750 -	2.000 -	0.000 -	2.000 -
<p>FY 2015 Accomplishments:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continued development of connectionless array technologies and true fiber-optic arrays. Continued efforts to explore Twin-line variants of new submarine Long-line arrays for future application to SURTASS. Continued development of fishing net mitigation approaches.</p> <p>FY 2016 Plans: Continue development of connectionless array technologies and true fiber-optic arrays. Continue efforts to explore Twin-line variants of new submarine Long-line arrays for future application to SURTASS. Continue development of fishing net mitigation approaches and associated test and evaluation efforts. Develop upgraded components to enhance system performance.</p> <p>FY 2017 Base Plans: Continue development of connectionless array technologies and true fiber-optic arrays. Continue efforts to explore Twin-line variants of new submarine Long-line arrays for future application to SURTASS. Continue development of fishing net mitigation approaches and associated test and evaluation efforts. Develop upgraded components to enhance system performance.</p> <p>FY 2017 OCO Plans: N/A</p>						
Title: Theater Anti-Submarine Warfare (TASW)		32.344	0.000	29.080	0.000	29.080
		Articles:	-	-	-	-
<p>FY 2015 Accomplishments: FY15 RDT&E funds were distributed to the performers to support system production and at sea testing in support of the CNO's new area of interest, Theater Anti-Submarine Warfare (TASW) Offset strategy. Conducted representative Transformational Reliable Acoustic Path (TRAPS) system development, integration, and testing in the new area of interest.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: FY17 funds will be used to complete prototype units and deploy systems to meet urgent need. Additional approved units will be fielded to complete the baseline surveillance capability. Evaluation and assessment</p>						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
of initial deployed units system performance and continued operational need will be conducted to determine potential transition to Programs of Record.					
FY 2017 OCO Plans: N/A					
Title: Classified Effort	26.527	35.437	11.596	0.000	11.596
Articles:	-	-	-	-	-
Description: The FSS portion of 0766 is classified with details available at a higher classification level.					
FY 2015 Accomplishments: The FSS portion of 0766 is classified with details available at a higher classification level.					
FY 2016 Plans: The FSS portion of 0766 is classified with details available at a higher classification level.					
FY 2017 Base Plans: The FSS portion of 0766 is classified with details available at a higher classification level.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	71.504	48.744	58.542	0.000	58.542

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/2237: <i>Surveillance Towed Array Sensor System</i>	23.819	12.953	36.136	-	36.136	19.472	18.715	19.543	24.831	Continuing	Continuing

Remarks

D. Acquisition Strategy

FY 2010: T&E Milestones: CLFA/TL-29A/ICP DT.
 FY 2011: Engineering Milestones: ICP Tech Refresh.
 FY 2011: T&E Milestones: CLFA/TL-29A/ICP DT. LFA/TL-29A/ICP FOT&E.
 FY 2012: T&E Milestones: CLFA/TL-29A/ICP DT/OT. LFA/TL-29A/ICP FOT&E.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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<p>FY 2013: LFA/TL-29A/ICP FOT&E. FY 2014: ICP Tech Refresh. CLFA OT/CLFA/TL-29A/ICP FOT&E FY 2015: ICP Tech Refresh. LFA/CLFA/TL-29A/ICP FOT&E FY 2016: ICP Tech Refresh. ASB Step 4 Testing. FY 2017: ICP Tech Refresh. CLFA/TL-29A/ICP FOT&E The FSS portion of 0766 is classified with details available at a higher classification level.</p> <p>E. Performance Metrics Successfully complete CLFA Operational Test Readiness Review. Successfully complete CLFA Developmental Test / Operational Test. Successful demonstration of required LFA/CLFA improvements capability. Successful transition of Submarine Advanced Processing Build (APB) functionality into IUSS products. Successful transition of net mitigation technologies into Towed Array baseline. The FSS portion of 0766 is classified with details available at a higher classification level.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0204311N / Integrated Surveillance System				Project (Number/Name) 0766. / IUSS Detect/Classif System							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IUSS COMMON ARCHITECTURE	C/CPFF	LOCKHEED MARTIN : VA	24.818	4.792	Nov 2014	4.034	Dec 2015	5.563	Dec 2016	-		5.563	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	SS/CPFF	APL/JHU : MD	2.208	0.513	Nov 2014	0.640	Feb 2016	0.767	Feb 2017	-		0.767	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	Various	VARIOUS : Not Specified	65.937	0.659	Nov 2014	1.093	Dec 2015	2.004	Dec 2016	-		2.004	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	C/CPFF	ADAPTIVE Methods : VA	1.600	0.550	Nov 2014	0.500	Dec 2015	0.687	Dec 2016	-		0.687	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	WR	NFESC : CA	1.382	0.425	Nov 2014	0.425	Dec 2015	0.500	Dec 2016	-		0.500	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	WR	SSC PAC : CA	1.117	0.225	Nov 2014	0.240	Dec 2015	0.240	Dec 2016	-		0.240	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	SS/CPFF	APL/JHU : MD	1.919	0.374	Nov 2014	0.610	Feb 2016	0.620	Feb 2017	-		0.620	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	Various	VARIOUS : Not Specified	116.991	0.081	Nov 2014	0.000		0.000		-		0.000	0.000	117.072	-
ARRAY IMPROVEMENTS	SS/CPFF	APL/JHU : VA	2.048	0.575	Nov 2014	0.735	Feb 2016	0.810	Feb 2017	-		0.810	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	WR	ADAPTIVE METHODS : VA	0.789	0.200	Nov 2014	0.225	Jan 2016	0.275	Jan 2017	-		0.275	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	Various	VARIOUS : Not Specified	9.109	0.296	Nov 2014	0.310	Dec 2015	0.380	Dec 2016	-		0.380	Continuing	Continuing	Continuing
TASW FIELDING	Various	SSC PAC : CA	0.000	0.731	Nov 2015	0.000		20.739	Jan 2017	-		20.739	0.000	21.470	-
TASW FIELDING	Various	NUWC NEWPORT : RI	0.000	0.300	Nov 2015	0.000		1.920	Jan 2017	-		1.920	0.000	2.220	-
TASW FIELDING	Various	APL/UW : WA	0.000	6.740	Nov 2015	0.000		0.300	Jan 2017	-		0.300	0.000	7.040	-
TASW FIELDING	Various	APL/UT : TX	0.000	0.000		0.000		1.000	Jan 2017	-		1.000	0.000	1.000	-
TASW FIELDING	Various	VARIOUS : CA	0.000	0.461	Nov 2015	0.000		5.125	Jan 2017	-		5.125	0.000	5.586	-
TASW FIELDING	C/CPFF	LEIDOS : CA	0.000	23.652	Dec 2015	0.000		0.000		-		0.000	0.000	23.652	-
TASW FIELDING	Various	NSWC CARDEROCK : MD	0.000	0.075	Nov 2015	0.000		0.000		-		0.000	0.000	0.075	-
TASW FIELDING	C/CPFF	BAH : VA	0.000	0.385	Nov 2015	0.000		0.000		-		0.000	0.000	0.385	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FSS - Classified	Various	TBD : Not Specified	76.120	26.527	Nov 2014	35.437	Nov 2015	11.596	Nov 2016	-		11.596	Continuing	Continuing	Continuing
Subtotal			304.038	67.561		44.249		52.526		-		52.526	-	-	-

Remarks
The FSS portion of 0766 is classified with details available at a higher classification level.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IUSS COMMON ARCHITECTURE	WR	SSC PAC : CA	3.718	0.274	Nov 2014	0.250	Dec 2015	0.381	Dec 2016	-		0.381	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	C/CPFF	APL/JHU : MD	0.977	0.434	Nov 2014	0.700	Feb 2016	1.031	Dec 2016	-		1.031	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	C/CPFF	Lockheed Martin : VA	1.852	0.700	Nov 2014	0.700	Dec 2015	0.906	Dec 2016	-		0.906	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	Various	VARIOUS : Not Specified	4.349	0.277	Nov 2014	0.280	Dec 2015	0.397	Dec 2016	-		0.397	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	WR	SSC PAC : CA	0.663	0.115	Nov 2014	0.150	Dec 2015	0.195	Dec 2016	-		0.195	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/CLFA/LFA	Various	VARIOUS : Not Specified	7.487	0.068	Nov 2014	0.075	Jan 2016	0.141	Jan 2017	-		0.141	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	Various	VARIOUS : Not Specified	1.147	0.205	Nov 2014	0.200	Jan 2016	0.200	Jan 2017	-		0.200	Continuing	Continuing	Continuing
Subtotal			20.193	2.073		2.355		3.251		-		3.251	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0204311N / Integrated Surveillance System				0766. / IUSS Detect/Classif System							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IUSS COMMON ARCHITECTURE	C/CPFF	LOCKHEED MARTIN : VA	3.059	0.582	Nov 2014	0.700	Dec 2015	0.846	Dec 2016	-		0.846	Continuing	Continuing	Continuing
IUSS COMMON ARCHITECTURE	Various	VARIOUS : Not Specified	7.497	0.334	Nov 2014	0.375	Dec 2015	0.550	Dec 2016	-		0.550	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/ CLFA/LFA	WR	OPTEVFOR : Not Specified	0.374	0.088	Nov 2014	0.090	Mar 2016	0.095	Mar 2017	-		0.095	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/ CLFA/LFA	Various	VARIOUS : Not Specified	20.793	0.056	Nov 2014	0.070	Dec 2015	0.084	Dec 2016	-		0.084	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	SS/CPFF	APL/JHU : MD	0.570	0.135	Nov 2014	0.185	Feb 2016	0.235	Feb 2017	-		0.235	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	Various	VARIOUS : Not Specified	2.768	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			35.061	1.195		1.420		1.810		-		1.810	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IUSS COMMON ARCHITECTURE	Various	VARIOUS : Not Specified	6.057	0.518	Nov 2014	0.535	Mar 2016	0.730	Mar 2017	-		0.730	Continuing	Continuing	Continuing
ACTIVE IMPROVEMENT/ CLFA/LFA	Various	VARIOUS : Not Specified	15.692	0.068	Nov 2014	0.090	Mar 2016	0.125	Mar 2017	-		0.125	Continuing	Continuing	Continuing
ARRAY IMPROVEMENTS	Various	VARIOUS : Not Specified	0.374	0.089	Nov 2014	0.095	Mar 2016	0.100	Mar 2017	-		0.100	Continuing	Continuing	Continuing
Subtotal			22.123	0.675		0.720		0.955		-		0.955	-	-	-
Project Cost Totals			381.415	71.504		48.744		58.542		-		58.542	-	-	-
Remarks															
The R3 and the R4 / R4A reflect the UNCLASSIFIED portion of the PE.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy							Date: February 2016			
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

The FSS portion of 0766 is classified with details available at a higher classification level.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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Proj 0766.L24	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
TEST and EVALUATION MILESTONES																																
TRAPS Testing					TRAPS Developmental Testing				TRAPS Developmental testing (2nd Test)																							
CLFA / TL-29A Testing					ASB Step 4 Testing				CLFA / TL-29A / ICP IOT & E / FOT&E				ASB Step 4				CLFA / TL-29A / ICP IOT & E / FOT&E				ASB Step 4				CLFA / TL-29A / ICP IOT & E / FOT&E							
LFA / TL-29A Testing																																
PRODUCTION MILESTONES																																
ICP SOFTWARE DEVELOPMENT																																
ICP Tech Refresh																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0766.L24				
TEST and EVALUATION MILESTONES: TRAPS Testing: TRAPS Developmental testing	1	2016	1	2016
TEST and EVALUATION MILESTONES: TRAPS Testing: TRAPS Developmental testing (2nd test)	3	2016	3	2016
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: ASB Step 4 Testing	3	2016	3	2016
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: CLFA / TL-29A/ ICP IOT & E / FOT&E (COMPL 2017)	3	2017	4	2017
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: ASB Step 4	3	2018	3	2018
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: CLFA / TL-29A/ ICP IOT & E / FOT&E (COMPL 2019)	3	2019	4	2019
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: ASB Step 4	3	2020	3	2020
TEST and EVALUATION MILESTONES: CLFA / TL-29A Testing: CLFA / TL-29A/ ICP IOT & E / FOT&E (COMPL 2021)	3	2021	4	2021
TEST and EVALUATION MILESTONES: LFA / TL-29A Testing: LFA / TL-29A/ ICP FOT & E (COMPLETE 2015)	3	2015	3	2015
TEST and EVALUATION MILESTONES: LFA / TL-29A Testing: LFA / TL-29A/ ICP FOT & E (COMPLETE 2018)	1	2018	3	2018
TEST and EVALUATION MILESTONES: LFA / TL-29A Testing: LFA / TL-29A/ ICP FOT & E (COMPLETE 2020)	1	2020	3	2020
PRODUCTION MILESTONES: Field First Segment TRAPS/Carina	1	2017	1	2017
PRODUCTION MILESTONES: Field Second Segment TRAPS/Carina	1	2018	1	2018
PRODUCTION MILESTONES: ICP SOFTWARE DEVELOPMENT: ICP Software Development	1	2015	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204311N / <i>Integrated Surveillance System</i>	Project (Number/Name) 0766. / <i>IUSS Detect/Classif System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 1st QTR FY15	1	2015	1	2015
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 3rd QTR FY15	3	2015	3	2015
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 4th QTR FY15	4	2015	1	2016
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 1st QTR FY17	1	2017	1	2017
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 3rd QTR FY17	3	2017	3	2017
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 4th QTR FY17	4	2017	1	2018
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 1st QTR FY19	1	2019	1	2019
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 3rd QTR FY19	3	2019	3	2019
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 4th QTR FY19	4	2019	1	2020
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 1st QTR FY21	1	2021	1	2021
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 3rd QTR FY21	3	2021	3	2021
PRODUCTION MILESTONES: ICP Tech Refresh: ICP Tech Refresh 4th QTR FY21	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	28.862	5.522	11.335	13.929	-	13.929	1.646	1.162	1.205	1.244	Continuing	Continuing
2231: <i>LCAC / LCU 1700</i>	28.862	4.940	11.335	10.536	-	10.536	1.646	1.162	1.205	1.244	Continuing	Continuing
2909: <i>Amphibious Lighterage Development</i>	0.000	0.582	0.000	3.393	-	3.393	0.000	0.000	0.000	0.000	0.000	3.975

A. Mission Description and Budget Item Justification

Landing Craft Air Cushion (LCAC) Technology Transition: Provides for research and development efforts on LCAC Future Naval Capabilities to transfer technologies to functional uses on current LCACs. Current technology initiatives include sustainability/readiness/performance analyses, LCAC communication improvements, development and qualification of Full Authority Digital Engine Controller (FADEC) for LCAC engines, new torque meter design for LCAC ETF40B engines, Marine Rotor Active Balancing System (MRABS), and LCAC fuel efficiency initiatives.

LCU 1700 (formerly Surface Connector X Replacement (SC(X)(R))): Replacement program for the current Landing Craft Utility (LCU) 1610 class craft - a class of craft that has significantly exceeded its 20-year planned service life. LCU 1700 will provide similar payload, range, speed, and interoperability. Procurement is currently scheduled to begin in FY16.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.609	11.335	8.900	-	8.900
Current President's Budget	5.522	11.335	13.929	-	13.929
Total Adjustments	0.913	0.000	5.029	-	5.029
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.915	0.000			
• SBIR/STTR Transfer	-0.002	0.000			
• Program Adjustments	0.000	0.000	4.923	-	4.923
• Rate/Misc Adjustments	0.000	0.000	0.106	-	0.106

Change Summary Explanation

FY 2015 changes reflect an increase of \$0.915 million to support the definition of requirements and Analysis of Alternatives (AoA) which would enable the LCAC to transport and perform at-sea launch of legacy and future United States Marine Corps (USMC) vehicles and a reduction of \$0.002 million for SBIR transfer.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	
FY 2017 request reflects an increase of \$2 million for Landing Craft Replacement (formerly SC(X)(R)), \$3.500 million increase for Lighter Amphibious Resupply Cargo Vehicle (LARC-V) Replacement, \$0.106 million increase for rates/miscellaneous adjustments, and a reduction of \$0.577 million for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2231: LCAC / LCU 1700	28.862	4.940	11.335	10.536	-	10.536	1.646	1.162	1.205	1.244	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Landing Craft Air Cushion (LCAC) Technology Transition: Provides for research and development efforts on LCAC Future Naval Capabilities to transfer technologies to functional uses on current LCACs. Current technology initiatives include sustainability/readiness/performance analyses, LCAC communication improvements, development and qualification of Full Authority Digital Engine Controller (FADEC) for LCAC engines, new torque meter design for LCAC ETF40B engines, Marine Rotor Active Balancing System (MRABS), and LCAC fuel efficiency initiatives.

LCU 1700 (formerly SC (X)(R)): Replacement program for the current Landing Craft Utility (LCU) 1610 class craft - a class of craft that has significantly exceeded its 20-year planned service life. LCU 1700 will provide similar payload, range, speed, and interoperability. Procurement is currently scheduled to begin in FY16.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: LCAC RDT&E,N and LCU 1700	4.940	11.335	10.536	0.000	10.536
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
FY15 LCAC: Performed full-scale testing of all-in-one LCAC power supply capable of charging craft batteries, powering 28VD electronics and providing 60Hz 115VAC power. Improved the reliability of the LCAC.					
FY15 LCU 1700: Completed requirements documentation; continued Preliminary Design (PD) / Contract Design (CD) and Test and Evaluation Master Plan (TEMP) development; conducted System Functional Review (SFR); initiated Life Cycle Sustainment Plan (LCSP) development; began integrated development /operational testing; Capability Development Document (CDD) pending approval.					
FY 2016 Plans:					
FY16 LCAC: Develop technologies to prevent moisture intrusion into craft windows; develop auxiliary power unit controller to improve visibility and equipment reliability. Improve the reliability of the LCAC and harden main engines against marine corrosion. Address electronic charting requirements and meet Windows operating system IA requirements. Complete development of LCAC equipment and procedures which maximize the sea state in which Marine Amphibious Assault Vehicles (ACVs) can be launched from a waterborne LCAC.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY16 LCU 1700: Transition from Preliminary Design (PD) to Contract Design (CD) efforts. CD efforts are the next iteration of shipbuilding design, requiring significantly greater detail in order to support the effective translation of the engineering decisions and findings from the PD into a biddable technical package, including specifications and contract guidance drawings which will allow the shipbuilders to develop competitive bids once the Request for Proposal (RFP) is released.</p> <p>Conduct supporting trade studies with Industry input, component or system prototype testing and modeling and simulation as needed to support the Contract Design (CD) effort. These efforts will be part of the integrated Developmental/Operational Testing approach.</p> <p>Continue use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP), and initiate development of the Acquisition Strategy and other supporting Milestone documentation.</p> <p>FY 2017 Base Plans: FY17 LCAC: Improve reliability and maintainability of the LCAC HM&E systems including testing a composite ramp to reduce maintenance and repair costs, software development and testing to improve powertrain performance, redesigning hydraulic flex lines as well as bow thruster bearings to extend MTBF, and developing and testing new methods for well deck lifting procedures. Develop updates to meet Windows 10 Operating System IA requirements and cybersecurity needs. Complete mandated migration to electronic charting. Address C4N obsolescence, usability and maintenance issues.</p> <p>FY17 LCU 1700: Provide risk reduction to the LCU 1700 design by continuing development in the following areas: perform hydrodynamic testing, to include self-propelled and maneuvering tests model tests and flow channel optimization of propulsor and rudders; modeling and simulation analysis, to include finite element analysis (FEA) and computational fluid dynamics (CFD); demonstrate full scale system level prototyping, utilizing LCU 1610 craft; and assessment of Windows 10 Operating System, IA requirements, and cybersecurity needs. These efforts will be part of the integrated Developmental/Operational Testing approach.</p> <p>Continue use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP). Continue development of Milestone documentation supporting a combined MS B/C.</p> <p>FY 2017 OCO Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	4.940	11.335	10.536	0.000	10.536

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN 0970: LCAC	7.380	15.125	3.090	-	3.090	5.468	24.156	5.710	20.830	0.000	174.683
• SCN 5139: LCAC SLEP	40.485	80.738	1.774	-	1.774	0.000	0.000	0.000	0.000	0.000	1,340.197

Remarks

D. Acquisition Strategy

Technology Transition - RDT&E efforts commenced in FY06. Multiple contracts and Field Activities are involved through FY21 to complete the various projects.

E. Performance Metrics

FY15 LCAC: Performed full-scale testing of all-in-one LCAC power supply capable of charging craft batteries, powering 28VD electronics and providing 60Hz 115VAC power. Improved the reliability of the LCAC.

FY15 LCU 1700: Completed requirements documentation; continued Preliminary Design (PD) / Contract Design (CD) and Test and Evaluation Master Plan (TEMP) development; conducted System Functional Review (SFR); and Preliminary Design Review (PDR); initiated Life Cycle Sustainment Plan (LCSP) development; began integrated development /operational testing; Capability Development Document (CDD) pending approval.

FY 16 LCAC: Develop technologies to prevent moisture intrusion into craft windows; develop auxiliary power unit controller to improve visibility and equipment reliability. Improve the reliability of the LCAC and harden main engines against marine corrosion. Address electronic charting requirements and meet Windows operating system IA requirements. Complete development of LCAC equipment and procedures which maximize the sea state in which Marine Amphibious Assault Vehicles (ACVs) can be launched from a waterborne LCAC.

FY16 LCU 1700: Transition from Preliminary Design (PD) to Contract Design (CD) efforts. CD efforts are the next iteration of shipbuilding design, requiring significantly greater detail in order to support the effective translation of the engineering decisions and findings from the PD into a biddable technical package, including specifications and contract guidance drawings which will allow the shipbuilders to develop competitive bids once the Request for Proposal (RFP) is released.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700
<p>Conduct supporting trade studies with Industry input, component or system prototype testing and modeling and simulation as needed to support the Contract Design effort. These efforts will be part of the integrated Developmental/Operational Testing approach.</p> <p>Continue use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP), and initiate development of the Acquisition Strategy and other supporting Milestone documentation.</p> <p>FY 2016 OCO Plans: N/A</p> <p>FY 2017 Base Plans:</p> <p>FY 17 LCAC:Improve reliability and maintainability of the LCAC HM&E systems including testing a composite ramp to reduce maintenance and repair costs, software development and testing to improve powertrain performance, redesigning hydraulic flex lines as well as bow thruster bearings to extend MTBF, and developing and testing new methods for well deck lifting procedures. Develop updates to meet Windows 10 Operating System IA requirements and cybersecurity needs. Complete mandated migration to electronic charting. Address C4N obsolescence, usability and maintenance issues.</p> <p>FY17 LCU 1700:Provide risk reduction to the LCU 1700 design by continuing development in the following areas: perform hydrodynamic testing, to include self-propelled and maneuvering tests model tests and flow channel optimization of propulsor and rudders; modeling and simulation analysis, to include finite element analysis (FEA) and computational fluid dynamics (CFD); demonstrate full scale system level prototyping, utilizing LCU 1610 craft; and assessment of Windows 10 Operating System, IA requirements, and cybersecurity needs. These efforts will be part of the integrated Developmental/Operational Testing approach.</p> <p>Continue use of Integrated Product Teams to support development of the Test and Evaluation Master Plan (TEMP) and Life Cycle Sustainment Plan (LCSP). Continue development of Milestone documentation supporting a combined MS B/C.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Component Development	WR	NSWC CD : Philadelphia, PA	8.325	0.000		0.000		0.000		-		0.000	0.000	8.325	-
Systems Engineering	WR	NSWC CD : Philadelphia, PA	4.142	1.196	Feb 2015	1.222	Feb 2016	0.462	Feb 2017	-		0.462	3.296	10.318	-
LCU 1700	Various	Various : Various	4.473	1.405	Mar 2015	8.658	Mar 2016	9.524	Mar 2017	-		9.524	7.087	31.147	-
Subtotal			16.940	2.601		9.880		9.986		-		9.986	10.383	49.790	-

Remarks
 **The key events driving the growth between FY16 and FY17 Product Development include: completing trade studies and prototyping systems efforts to reduce program risk and support potential reductions in Total Ownership Cost, transitioning CD efforts and trade study/prototyping results into the biddable technical package, including updates of the earlier PD- based specifications and contract guidance drawings, finalizing the statement of work and all other required documents to support release of a Request for Proposal (RFP) package, and completion of all milestone documents in preparation for staffing for an early FY18 MS B/C decision.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	WR	NSWC PCD : Panama City, FL	7.377	2.074	Mar 2015	1.185	Mar 2016	0.448	Mar 2017	-		0.448	3.195	14.279	-
LCU 1700	Various	Various : Various	0.565	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			7.942	2.074		1.185		0.448		-		0.448	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental T&E	WR	Various : Various	0.287	0.000		0.000		0.000		-		0.000	0.000	0.287	-
Operational T&E	WR	NSWC PCD : Panama City, FL	0.933	0.205	Mar 2015	0.209	Mar 2016	0.079	Mar 2017	-		0.079	0.565	1.991	-
Test Assets	WR	NSWC PCD : Panama City, FL	0.850	0.000		0.000		0.000		-		0.000	0.000	0.850	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2231 / LCAC / LCU 1700

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2231				
LCAC Technology Initiatives	1	2015	4	2020
LCAC/LCU 1700 RDT&E	1	2015	4	2021
Materiel Solution Analysis	1	2015	1	2015
Requirements Documentation Development	1	2015	4	2015
Preliminary Design / Contract Design	1	2015	2	2017
Test and Evaluation Master Plan (TEMP) Development	1	2015	1	2017
System Functional Review (SFR)	3	2015	3	2015
Life Cycle Sustainment Plan (LCSP) Development	1	2015	1	2017
Integrated Developmental / Operational Testing	3	2015	4	2017
Approved Capability Development Document (CDD)	4	2015	4	2015
Preliminary Design Review (PDR)	4	2017	4	2017
Early Operational Assessment (EOA)	3	2016	3	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2909 / <i>Amphibious Lighterage Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2909: <i>Amphibious Lighterage Development</i>	0.000	0.582	0.000	3.393	-	3.393	0.000	0.000	0.000	0.000	0.000	3.975
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Sealift support amphibious vehicle which will be the Lighter Amphibious Resupply Cargo, 5 ton (LARC-V) Replacement, provides amphibious equipment and personnel transport and near shore salvage and diving capability. It is a vital piece of equipment required for the execution of the Naval Beach Group (NBG) and Underwater Construction Team (UCT) missions.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: New Accomplishment/Planned Program Entry	0.582	0.000	3.393	0.000	3.393
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Commenced Technology Investigations with Naval Facilities Engineering Command (NAVFAC HQ), NAVFAC field activities and other agencies involved in this effort. Researched operational requirements and craft stability, propulsion systems, and human interface requirements for Lighter Amphibious Resupply Cargo, 5-ton (LARC-V) Replacement, and initiated Analysis of Alternatives.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Conduct scale modeling, prototype development and testing, and prepare draft solicitation package for low rate initial production (LRIP) craft in FY 19.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.582	0.000	3.393	0.000	3.393

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2909 / <i>Amphibious Lighterage Development</i>

D. Acquisition Strategy

RDT&E funding is required to begin development of a replacement amphibious vehicle to support OPLAN and Required Operational Capability/Potential Operating Environment (ROC/POE) requirements of the Naval Beach Groups and Underwater Construction Teams. Technology investigation began in FY15. NAVFAC HQ, NAVFAC field activities, and other agencies are involved in this development effort

E. Performance Metrics

Quarterly Program Reviews are conducted with the performer to include funds status discussion, schedule review.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>					Project (Number/Name) 2909 / <i>Amphibious Lighterage Development</i>				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Amphibious Vehicle Replacement	WR	Naval Surface Warfare Center Carderock Division (N : West Bethesda, MD)	0.000	0.582	Aug 2015	0.000		3.393	Jan 2017	-		3.393	0.000	3.975	0.200
Subtotal			0.000	0.582		0.000		3.393		-		3.393	0.000	3.975	0.200

Remarks
 RD TEN funding is required to begin development of a replacement amphibious vehicle to support OPLAN and Required Operational Capability/Potential Operation Environment (ROC/POE) requirements of the NBGs and UCTs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.582	0.000	3.393	-	3.393	0.000	3.975	0.200

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2909 / <i>Amphibious Lighterage Development</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 2909	
Development of acquisition and design requirements for Amphibious Vehicle Replacement	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204413N / <i>Amphibious Tactical Supt Units</i>	Project (Number/Name) 2909 / <i>Amphibious Lighterage Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2909				
Development of acquisition and design requirements for Amphibious Vehicle Replacement	1	2015	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0204460M I (U)Ground/Air Task Oriented Radar (G/ATOR)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	144.649	90.577	65.598	83.538	-	83.538	50.274	10.072	12.510	6.348	Continuing	Continuing
9C89: Marine Ground-Air Radar	144.649	90.577	65.598	83.538	-	83.538	50.274	10.072	12.510	6.348	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 386

A. Mission Description and Budget Item Justification

The Ground/Air Task Oriented Radar (G/ATOR) is a multi-role, ground-based, expeditionary radar that replaces five legacy radar systems for the Marine Air Ground Task Force. It satisfies the Marine Air Command and Control System (G/ATOR Block 1) and the Ground Counter Fire/Counter Battery (G/ATOR Block 2) capabilities. The G/ATOR replaces the AN/TPS-63 and complements the AN/TPS-59 long range radar and will provide mobile, multi-functional, three-dimensional surveillance of air breathing targets, detection of cruise missiles and UAS, and the cueing of air defense weapons. The G/ATOR contributes to the extension of Sea Shield/Sea Strike by surveillance and detection of enemy air threats not seen by Navy sensors in the littorals by participating in a cooperative engagement network of sensors and shooters. G/ATOR enables Integrated Fire Control (IFC) and provides engage/fire on remote capability. G/ATOR surveillance coverage with IFC will provide unprecedented reach, volume, and precision in the execution of Operational Maneuver From The Sea, allowing Naval forces to project and sustain power deep inland.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	99.082	80.129	84.424	-	84.424
Current President's Budget	90.577	65.598	83.538	-	83.538
Total Adjustments	-8.505	-14.531	-0.886	-	-0.886
• Congressional General Reductions	-	-0.031			
• Congressional Directed Reductions	-	-14.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.551	0.000			
• SBIR/STTR Transfer	-2.954	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	-0.886	-	-0.886

Change Summary Explanation

RDT&E funding increases (\$17.940M) from FY16 to FY17 to perform DT1C/DT1D test events and complete development and begin implementation of Program Protection for incorporation into the system.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)				Project (Number/Name) 9C89 / Marine Ground-Air Radar			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9C89: Marine Ground-Air Radar	144.649	90.577	65.598	83.538	-	83.538	50.274	10.072	12.510	6.348	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 386												

A. Mission Description and Budget Item Justification

The Ground/Air Task Oriented Radar (G/ATOR) is a multi-role, ground-based, expeditionary radar that replaces five legacy radar systems for the Marine Air Ground Task Force. It satisfies the Marine Air Command and Control System (G/ATOR Block 1) and the Ground Counter Fire/Counter Battery (G/ATOR Block 2) capabilities. The G/ATOR replaces the AN/TPS-63 and complements the AN/TPS-59 long range radar and will provide mobile, multi-functional, three-dimensional surveillance of air breathing targets, detection of cruise missiles and UAS, and the cueing of air defense weapons. The G/ATOR contributes to the extension of Sea Shield/Sea Strike by surveillance and detection of enemy air threats not seen by Navy sensors in the littorals by participating in a cooperative engagement network of sensors and shooters. G/ATOR enables Integrated Fire Control (IFC) and provides engage/fire on remote capability. G/ATOR surveillance coverage with IFC will provide unprecedented reach, volume, and precision in the execution of Operational Maneuver From The Sea, allowing Naval forces to project and sustain power deep inland. RDT&E funding increases (\$17.940M) from FY16 to FY17 to perform DT1C/DT1D test events, complete development and begin implementation of Program Protection for incorporation into the system.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: G/ATOR Contractor Technical, Development Engineering/Block 1	52.314	12.547	21.560	0.000	21.560
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Continued Reliability Improvements, Transition to Production and Producibility Enhancements in support of GaN Technical Insertion. -Initiated Program Protection planning and Refurbishment of Engineering Development Model (EDM)-1.					
FY 2016 Plans: -Continue Program Protection planning, EDM-1 Refurbishment, Reliability Improvements, Transition to Production, and Producibility Enhancements in support of GaN Technical Insertion. -Initiate Program Protection efforts.					
FY 2017 Base Plans: -Continue Program Protection efforts, Reliability Improvements, Technology Protection implementation, Transition to Production, and Producibility Enhancements in support of GaN Technical Insertion.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Complete Program Protection planning and EDM-1 Refurbishment.						
FY 2017 OCO Plans: N/A						
Title: G/ATOR Contractor Technical, Development Engineering/Block 2		19.920	20.471	19.488	0.000	19.488
	Articles:	-	-	-	-	-
FY 2015 Accomplishments: Initiated development of G/ATOR Block 2 software.						
FY 2016 Plans: Continue development of G/ATOR Block 2 software.						
FY 2017 Base Plans: Complete development of G/ATOR Block 2 software.						
FY 2017 OCO Plans: N/A						
Title: Government Technical Support		10.924	13.989	14.100	0.000	14.100
	Articles:	-	-	-	-	-
Description: The Government Technical Support Team provides governmental support functions to the G/ATOR Program Office. Functions include technical planning, execution and analysis across multi-disciplinary competencies.						
FY 2015 Accomplishments: Continued Government support from the following activities to enable program execution: MITRE; NAVAIR; NSWC Dahlgren; NSWC Crane; Carnegie Mellon University(CMU)/Software Engineering Institute (SEI); and NSWC Pt Hueneme.						
FY 2016 Plans: Continue Government support from the following activities to enable program execution: MITRE; NAVAIR; NSWC Dahlgren; NSWC Crane; Carnegie Mellon University(CMU)/Software Engineering Institute (SEI); and NSWC Pt Hueneme.						
FY 2017 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue Government support from the following activities to enable program execution: MITRE; NAVAIR; NSWC Dahlgren; NSWC Crane; Carnegie Mellon University(CMU)/Software Engineering Institute (SEI); and NSWC Pt Hueneme. FY 2017 OCO Plans: N/A					
Title: G/ATOR: Management Services & Travel Articles:	1.909 -	3.221 -	3.250 -	0.000 -	3.250 -
FY 2015 Accomplishments: Continued engineering, management & logistics program office support and travel in support of system development and Marine User RAM Opportunities. FY 2016 Plans: Continue to support engineering, management & logistics program office support and travel in support of system development and Marine User RAM Opportunities. FY 2017 Base Plans: Continue to support engineering, management & logistics program office support and travel in support of system development and development tests DT1C/DTCD and G/ATOR Block 1 (GB1) OA test. FY 2017 OCO Plans: N/A					
Title: G/ATOR: Test and Evaluation Articles:	5.510 -	15.370 -	25.140 -	0.000 -	25.140 -
FY 2015 Accomplishments: -Initiated planning for G/ATOR Block 1 (GB1) Developmental Test (DT1C) and Operational Assessment (OA). -Participated in WTI/CAC2S events. FY 2016 Plans: -Continue planning for G/ATOR Block 1 (GB 1) Developmental Test (DT1C) and Operational Assessment (OA). -Initiate planning for G/ATOR Block 2 (GB 2) Development Test (DT1D) and Operational Assessment (OA). -Continue participation in WTI/CAC2S in addition to DIVEX events. Includes procurement of ammunition to support DIVEX user events. FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue preparation for both G/ATOR Block 1 (GB 1) and G/ATOR Block 2 (GB2) Operational Assessment (OA). -Complete planning for both G/ATOR Block 1 (GB 1) Developmental Test (DT1C), and G/ATOR Block 2 (GB 2) Development Test (DT1D). -Initiate both G/ATOR Block 1 (GB 1) Developmental Test (DT1C) and G/ATOR Block 2 (GB 2) Development Test (DT1D). -Initiate procurement of ammunition (Rockets, Mortars and Artillery) to support G/ATOR Block 2 (GB 2) Development Test (DT1D). -Initiate G/ATOR Block 1 (GB 1) Operational Assessment (OA).					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	90.577	65.598	83.538	0.000	83.538

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE/0604504N/0718: <i>AIR CONTROL MATCAL S</i>	3.868	1.412	0.314	-	0.314	1.519	0.980	0.633	0.646	Continuing	Continuing
• PMC/7000: <i>INITIAL SPARES-G/ATOR</i>	2.572	0.000	11.193	-	11.193	20.327	13.112	13.270	13.528	Continuing	Continuing
• PMC/4655: <i>GRND/AIR TASK ORIENTED RADAR</i>	88.338	126.866	123.758	-	123.758	124.623	220.136	270.077	283.664	379.626	1,617.088

Remarks

D. Acquisition Strategy

The Ground/Air Task Oriented Radar (G/ATOR) is a multi-role, ground-based, expeditionary radar that replaces five legacy radar systems and provides the USMC Air Defense and Air Surveillance (AD/AS) (G/ATOR Block 1), Counterfire/Targeting (G/ATOR Block 2), and Air Traffic Control (G/ATOR Block 4) capability. The AD/AS (GB1) development effort was competitively awarded in 2007 and completed Milestone C in FY14. Development of the Counterfire/Targeting (GB2) capability was initiated in FY10 with a RFI to industry, followed by a Business Case Analysis (BCA) to select the most cost effective procurement strategy. The results of the BCA indicated that a sole source contract to Northrup Grumman Electronic Systems (NGES) was the most cost effective solution. Thus, the GB2 development contract awarded in August FY15.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	9C89 / Marine Ground-Air Radar

In FY13, a BCA was performed to determine the optimum strategy for development of the Air Traffic Control (GB4) mission with a developmental contract to be awarded in FY16 per the Navy Air Control (PE 0604504N) budget. Both the AD/AS (GB1) and Air Traffic Control (GB4) capabilities require JROCM mandated Identification Friend or Foe (IFF) enhancements.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
G/ATOR BLOCK 1 DEVELOPMENT	C/CPIF	NORTHROP GRUMMAN SYSTEMS CORPORATION : LINTHICUM HEIGHTS, MD	104.569	52.314	Dec 2014	12.547	Dec 2015	21.560	Dec 2016	-		21.560	Continuing	Continuing	Continuing
G/ATOR BLOCK 2 SOFTWARE DEVELOPMENT	C/CPFF	NORTHROP GRUMMAN SYSTEMS CORPORATION : LINTHICUM HEIGHTS, MD	0.000	19.920	Aug 2015	20.471	Mar 2016	19.488	Mar 2017	-		19.488	Continuing	Continuing	Continuing
Subtotal			104.569	72.234		33.018		41.048		-		41.048	-	-	-

Remarks
The funding increase of \$9.013M from FY16 to FY17 completes development and begins the implementation of Program Protection for incorporation. Award dates reflected are the actual obligation date for the first incremental award. The Northrop Grumman Product Development contract is incrementally funded throughout the fiscal year.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC TECHNICAL SUPPORT	FFRDC	MITRE : BOSTON, MA	1.700	1.803	Dec 2014	1.898	Dec 2015	1.750	Dec 2016	-		1.750	Continuing	Continuing	Continuing
NSWC TECHNICAL SUPPORT	WR	NSWC DAHLGREN : DAHLGREN, VA	17.272	7.612	Dec 2014	6.772	Dec 2015	6.900	Dec 2016	-		6.900	Continuing	Continuing	Continuing
NSWC TECHNICAL SUPPORT	WR	NSWC CRANE : CRANE, IN	0.379	0.158	Dec 2014	0.200	Dec 2015	0.200	Dec 2016	-		0.200	Continuing	Continuing	Continuing
GOVT TECHNICAL SUPPORT	C/FP	MCSC : QUANTICO, VA	0.131	0.485	Dec 2014	0.540	Dec 2015	0.500	Dec 2016	-		0.500	Continuing	Continuing	Continuing
FFRDC TECHNICAL SUPPORT	FFRDC	CMU/SEI : PITTSBURGH, PA	0.520	0.130	Aug 2015	0.650	Jul 2016	0.500	Jul 2017	-		0.500	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NSWC TECHNICAL SUPPORT	WR	NSWC PHD : DAM NECK, VA	0.790	0.721	Dec 2014	0.759	Dec 2015	0.650	Dec 2016	-		0.650	Continuing	Continuing	Continuing
NAVAIR TECHNICAL SUPPORT	WR	NAWC WD : CHINA LAKE, CA	0.000	0.015	Apr 2015	3.170	Jan 2016	3.600	Dec 2016	-		3.600	0.000	6.785	-
Subtotal			20.792	10.924		13.989		14.100		-		14.100	-	-	-

Remarks
Award dates reflected are the actual obligation date for the first incremental award. Most activities, excluding MITRE and CMU/SEI are incrementally funded throughout the fiscal year.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PRIME CONTRACTOR TEST SUPPORT	C/CPIF	NORTHROP GRUMMAN SYSTEMS CORPORATION : LINTHICUM HEIGHTS, MD	0.040	1.521	Dec 2014	4.092	Dec 2015	3.409	Dec 2016	-		3.409	Continuing	Continuing	Continuing
TEST SUPPORT	WR	NSWC DAHLGREN : DAHLGREN, VA	0.397	0.043	Dec 2014	1.778	Dec 2015	1.828	Dec 2016	-		1.828	Continuing	Continuing	Continuing
TEST PLANNING/ SUPPORT	MIPR	AMRDEC : REDSTONE ARSENAL, AL	3.086	1.078	Dec 2014	1.322	Dec 2015	1.353	Dec 2016	-		1.353	Continuing	Continuing	Continuing
TEST SUPPORT	MIPR	JTIC : FT HUACHUCA, AZ	0.098	0.050	Dec 2014	0.100	Dec 2015	0.200	Dec 2016	-		0.200	Continuing	Continuing	Continuing
TEST PLANNING/ SUPPORT	Various	NSWC-FALLBROOK : CRANE, IN	1.985	1.199	Dec 2014	0.900	Dec 2015	0.900	Dec 2016	-		0.900	Continuing	Continuing	Continuing
TEST EVALUATION SUPPORT	C/CPIF	MCOTE A : QUANTICO, VA	1.490	0.390	Dec 2014	1.397	Dec 2015	1.399	Dec 2016	-		1.399	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TEST SUPPORT	Various	NSWC CORONA : CORONA, CA	1.420	0.070	Mar 2015	0.160	Dec 2015	0.160	Dec 2016	-		0.160	Continuing	Continuing	Continuing
TEST PLANNING/ SUPPORT	Various	NSWC PHD : DAM NECK, VA	3.043	0.412	Dec 2014	1.400	Dec 2015	1.400	Dec 2016	-		1.400	Continuing	Continuing	Continuing
TEST ASSET PROCUREMENT	C/CPFF	MCSC : QUANTICO, VA	1.033	0.311	Dec 2014	1.302	Dec 2015	8.267	Dec 2016	-		8.267	Continuing	Continuing	Continuing
TEST SUPPORT	Various	3D MAW : CAMP PENDLETON, CA	0.961	0.173	Dec 2014	0.313	Dec 2015	1.948	Dec 2016	-		1.948	Continuing	Continuing	Continuing
TEST SUPPORT	Various	MACS-1 : YUMA, AZ	0.605	0.143	Dec 2014	1.670	Dec 2015	1.688	Dec 2016	-		1.688	Continuing	Continuing	Continuing
TEST SUPPORT	Various	MCTSSA : CAMP PENDLETON, CA	0.107	0.070	Dec 2014	0.786	Dec 2015	0.800	Dec 2016	-		0.800	Continuing	Continuing	Continuing
TEST SUPPORT	Various	3D LAAD : CAMP PENDLETON, CA	0.145	0.000		0.000		0.600	Dec 2016	-		0.600	Continuing	Continuing	Continuing
TEST SUPPORT	MIPR	ATC : ABERDEEN, MD	0.114	0.050	Dec 2014	0.150	Dec 2015	0.150	Dec 2016	-		0.150	Continuing	Continuing	Continuing
TEST OPERATOR SUPPORT	Various	10th or 12th MARINES : OAK FIELD, NC	0.000	0.000		0.000		1.038	Dec 2016	-		1.038	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	N/A : N/A	0.952	0.000		0.000		0.000		-		0.000	0.000	0.952	-
Subtotal			15.476	5.510		15.370		25.140		-		25.140	-	-	-

Remarks
The funding increase of 9.77M is due to the initiation of GB 1 and GB 2 developmental test events, initiation of the GB1 OA, procurement of test assets, and planning for the GB 2 OA.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MANAGEMENT SERVICES	C/FP	MCSC : MCSC - QUANTICO, VA	3.212	1.659	May 2015	2.946	Nov 2015	2.950	Nov 2016	-		2.950	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)					Project (Number/Name) 9C89 / Marine Ground-Air Radar				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TRAVEL	Various	MCSC : QUANTICO, VA	0.600	0.250	Sep 2015	0.275	Sep 2016	0.300	Sep 2017	-		0.300	Continuing	Continuing	Continuing
Subtotal			3.812	1.909		3.221		3.250		-		3.250	-	-	-

Remarks
Award dates reflected are the actual obligation date for the first incremental award. Each activity is incrementally funded throughout the fiscal year. Program management support costs will be adjusted/reduced accordingly as support efforts continue to transition to procurement funded.

Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	144.649	90.577		65.598		83.538		-	83.538	-	-	-

Remarks
The funding increases of \$17.940M from FY16 to FY17 supports DT1C/DT1D test events, completes development and starts the implementation of Program Protection for incorporation into the system.

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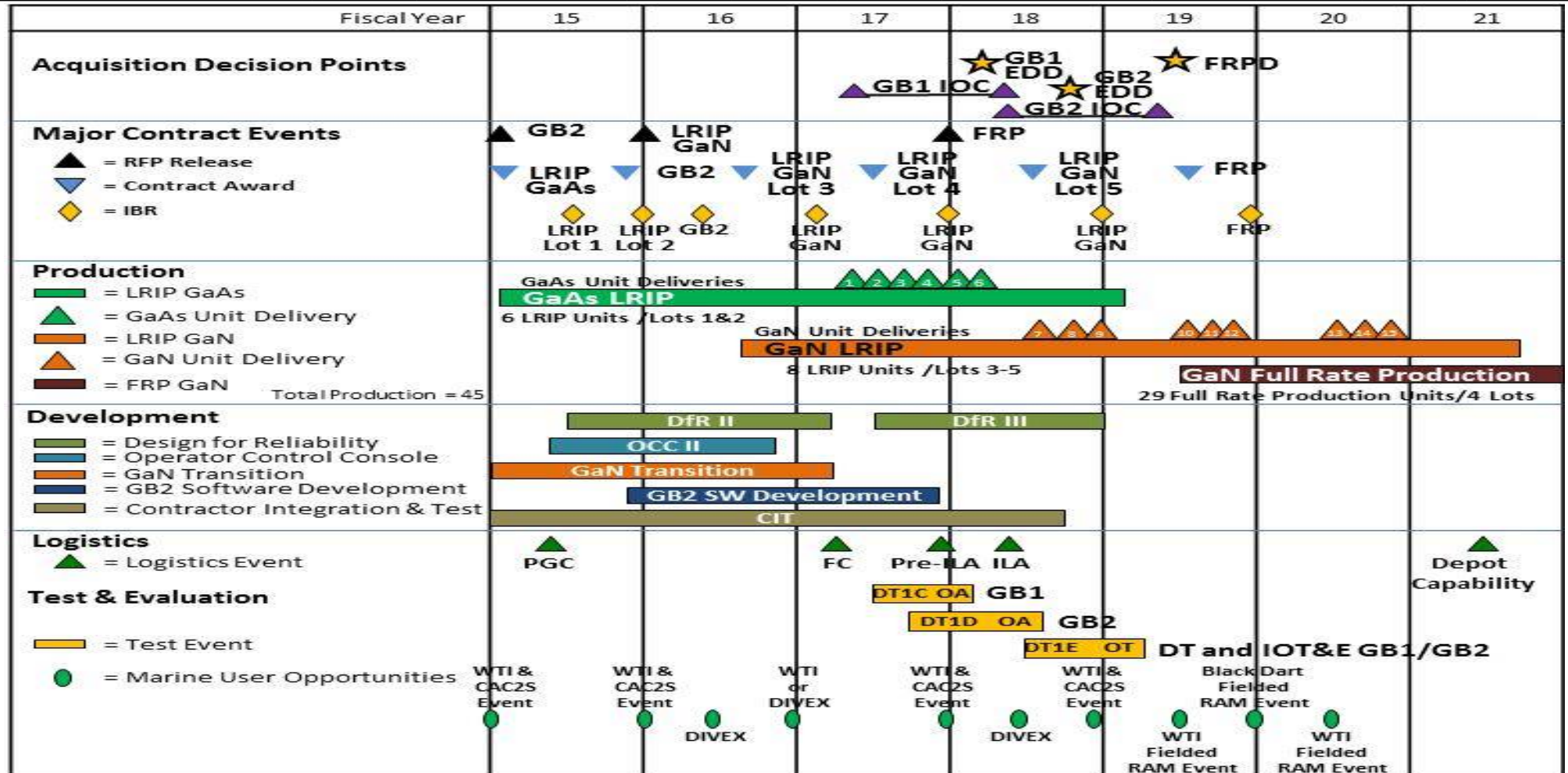
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0204460M / (U)Ground/Air Task
Oriented Radar (G/ATOR)

Project (Number/Name)
9C89 / Marine Ground-Air Radar



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9C89				
Gallium Arsenide (GaAs) Radar: Low Rate Initial Production (LRIP) Award	1	2015	1	2015
Gallium Arsenide (GaAs) Radar: GB1 Developmental Test (DT1C)	3	2017	4	2017
Gallium Arsenide (GaAs) Radar: GB1 Operational Assessment (OA)	4	2017	1	2018
Gallium Arsenide (GaAs) Radar: GB1 Radar IOC	2	2017	2	2018
Gallium Nitride (GaN) Radar: LRIP Lot 3 Contract Award	3	2016	3	2016
Gallium Nitride (GaN) Radar: GaN Transition	1	2015	1	2017
Gallium Nitride (GaN) Radar: LRIP Lot 4 Contract Award	3	2017	3	2017
Gallium Nitride (GaN) Radar: GB1/GB2 Developmental Test (DT1E)	3	2018	1	2019
Gallium Nitride (GaN) Radar: GB1/GB2 IOTE	1	2019	2	2019
Gallium Nitride (GaN) Radar: LRIP Lot 5 Contract Award	3	2018	3	2018
Gallium Nitride (GaN) Radar: FRPD	2	2019	2	2019
Gallium Nitride (GaN) Radar: FRP	3	2019	4	2021
Ground Weapons Locating Radar (GWLR): GB2 Development Contract Award	4	2015	4	2015
Ground Weapons Locating Radar (GWLR): GB2 Software Development	4	2015	4	2017
Ground Weapons Locating Radar (GWLR): GB2 Developmental Test (DT1D)	4	2017	1	2018
Ground Weapons Locating Radar (GWLR): GB2 Operatonal Assessment (OA)	2	2018	3	2018
Ground Weapons Locating Radar (GWLR): GB2 IOC	2	2018	2	2019
Marine User RAM Events: Weapons Tactics Instructor / Common Aviation Command and Control System (WTI / CAC2S-1)	1	2015	1	2015
Marine User RAM Events: WTI / CAC2S-2	4	2015	1	2016
Marine User RAM Events: Division Exercise (DIVEX-1)	2	2016	3	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204460M / (U)Ground/Air Task Oriented Radar (G/ATOR)	Project (Number/Name) 9C89 / Marine Ground-Air Radar
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Marine User RAM Events: WTI or DIVEX	4	2016	1	2017
Marine User RAM Events: WTI / CAC2S-3	4	2017	1	2018
Marine User RAM Events: DIVEX-2	2	2018	2	2018
Marine User RAM Events: WTI / CAC2S-4	4	2018	1	2019
Marine User RAM Events: WTI Fielded RAM Event-1	2	2019	3	2019
Marine User RAM Events: Black Dart Fielded RAM Event	4	2019	4	2019
Marine User RAM Events: WTI Fielded RAM Event-2	2	2020	3	2020
Continued Reliability Development: Design for Reliability (DFR) II	2	2015	1	2017
Continued Reliability Development: Design for Reliability (DFR) III	3	2017	1	2019
Continued Reliability Development: Operator Control Console (OCC) II	2	2015	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204571N / <i>Consolidated Trng Sys Dev</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	334.556	38.360	34.325	38.593	-	38.593	41.924	39.079	19.652	19.562	Continuing	Continuing
0604: <i>Training Range & Instr Dev</i>	141.886	3.199	3.502	3.310	-	3.310	3.604	3.676	3.725	3.640	Continuing	Continuing
1427: <i>Surface Tactical Team Trainer (STTT)</i>	80.857	16.366	9.954	12.289	-	12.289	10.647	9.543	9.796	10.034	Continuing	Continuing
2124: <i>Air Warfare Training</i>	39.658	6.194	1.611	1.462	-	1.462	1.670	1.707	1.729	1.679	Continuing	Continuing
3093: <i>TACTS/LATR Replacement</i>	62.663	5.787	14.490	14.962	-	14.962	24.421	24.153	4.402	4.209	Continuing	Continuing
3356: <i>High Fidelity Surface Trainers</i>	9.492	6.814	4.768	6.570	-	6.570	1.582	0.000	0.000	0.000	0.000	29.226

Program MDAP/MAIS Code: 223

A. Mission Description and Budget Item Justification

0604 - Training Range and Instrumentation Development project develops specialized instrumentations for fleet readiness training while minimizing life cycle costs. Tasks include development of the following: Large Area Tracking Range improvements, technology improvements for fixed and portable Anti-Submarine Warfare training ranges, and Tactical Training Range (TTR) infrastructure improvements to include: the Joint Display Subsystem, Radar Acquisition Display Subsystem, Electronic Warfare server, Link 16 interface, TTR rotary platform technology improvements and the Radiant Mercury Cross Domain Solution.

1427 - Surface Tactical Team Trainer (STTT) develops modifications during sustainment of Battle Force Tactical Training (BFTT) system. This is required to maintain capabilities and interfaces to provide realistic combat system coordinated team, unit and Fleet Synthetic Training (FST) collective Group/Force level training events. In addition, BFTT supports the embedded trainer "family of systems" approach for the development of a Total Ship Training Capability (TSTC). Specific improvements include improved integration with the Navy Continuous Training Environment (NCTE) and development of a High Level Architecture (HLA) capable, integrated shipboard network to meet increasing Commander Naval Surface Forces (CNSF) and United States Fleet Forces Command (USFFC) FST requirements. The need for transforming training is documented within the DoD Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan and Commander United States Fleet Forces Command Fleet Readiness Training Plan.

2124 - Air Warfare Training Development (AWTD) provides for risk mitigation and next generation platform, Unmanned Aerial Systems (UAS), Live Virtual Constructive (LVC) and associated visualization component development for distributed mission training, and for stand-alone and small footprint deployable devices. Support the Navy Aviation Simulation Master Plan (NASMP) upgrade efforts and Type/Model/Series programs with advanced visual system display configurations requirements. Provide for Open Architecture (OA), and common systems interface applications. Assess trainee cognitive requirements and the development and incorporation of next generation LVC, UAS constructive and associated visualization component technologies. Additionally, AWTD provides for advanced virtual component fidelity

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204571N / <i>Consolidated Trng Sys Dev</i>
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improvements for LVC capability which includes the "Mobility" Part-Task Trainers and the Multiplex Data Bus Controller Translator Transmitter enabling technologies. LVC technologies will facilitate advanced, cost effective weapons and tactics training and emerging capability requirements in the Air-Sea Battle Space and Naval Integrated Fire Control-Counter Air capabilities development.

3093 - The Tactical Combat Training System (TCTS) will provide the Navy a replacement for the Tactical Aircrew Combat Training System (TACTS) and Large Area Tracking Range systems. TCTS will also provide fleet deployable training for at-sea training and tactics development. By providing a rangeless capability, the system will greatly increase the area where live instrumented training can be conducted. Fielding of a pod system is complete at TACTS sites. The program incorporates an evolutionary development (incremental) towards an encrypted system capable of supporting a broad spectrum of naval platforms through weapons simulations, participant sensor stimulation, open architecture and an encrypted/long range secure data link.

3356- Funds FCA, high fidelity Aegis Integrated Air and Missile Defense (IAMD) individual and team trainers for all Advanced Capability Build (ACB) and below Aegis baselines. This line also provides funds for development of a CIWS 1B Baseline 2 Trainer upgrade as well as the research and development of advanced technologies to support BMD 5.1 and Command, Control, Communication, Computer, and Intelligence (C4I) Maintenance advanced technology upgrades to Aegis BMD Ashore Team Trainer at CSCS Unit Dam Neck.

JUSTIFICATON FOR BUDGET ACTIVITY:

This program is funded under Operational Systems Development because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	37.922	39.087	41.952	-	41.952
Current President's Budget	38.360	34.325	38.593	-	38.593
Total Adjustments	0.438	-4.762	-3.359	-	-3.359
• Congressional General Reductions	-	-0.004			
• Congressional Directed Reductions	-	-4.758			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.070	0.000			
• SBIR/STTR Transfer	-0.632	0.000			
• Program Adjustments	0.000	0.000	-0.600	-	-0.600
• Rate/Misc Adjustments	0.000	0.000	-2.759	-	-2.759

Change Summary Explanation

2124: R-4/R-4A reflects the following program changes: Due to a change in fleet priorities the following has been updated.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204571N / <i>Consolidated Trng Sys Dev</i>	
<p>Human/Instructional Systems: Production Milestone, Human INSTR. Systems NADTC Prototype added to 4th QTR 2015.</p> <p>Live Virtual Constructive (LVC) and Visuals: Production Milestone, LVC Instructional Sys. Technologies NADTC Prototype added to 4th QTR 2015.</p> <p>3093: R-4/R-4A reflects the following program changes: Due to Air Force divestiture from what was previously a collaborative program between services, the program schedule shifted to restructure TCTS Increment II to include only Navy requirements: Acquisition Milestones: Encryption MS B from 2nd Quarter 2016 to 1st Quarter 2017, Acquisition Milestones: Encryption MS C from 3rd Quarter 2019 to 4th Quarter 2020, Systems Development: Increment 2 Encrypted Datalink Capability from 3rd Quarter 2019 to 1st Quarter 2020, and Production Milestones: Increment 2 Encrypted Datalink Capability from 4th Quarter 2020 to 4th Quarter 2021.</p> <p>FY 2017 decrease in Consolidated Training Systems Development RDTEN by \$1.623M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev				Project (Number/Name) 0604 / Training Range & Instr Dev			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0604: <i>Training Range & Instr Dev</i>	141.886	3.199	3.502	3.310	-	3.310	3.604	3.676	3.725	3.640	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops specialized instrumentations for fleet readiness training while minimizing life cycle costs. Tasks include development of the following: Large Area Tracking Range (LATR) improvements, technology improvements for fixed and portable Anti-Submarine Warfare (ASW) training ranges, and Tactical Training Range (TTR) infrastructure improvements to include: the Joint Display Subsystem (JDS), Radar Acquisition Display Subsystem (RADS), Electronic Warfare (EW) server, Link 16 interface, TTR rotary platform technology improvements and the Cross Domain Solutions (CDS).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: LATR	2.547	1.250	2.515	0.000	2.515
Articles:	-	-	-	-	-
<p>Description: Design, integrate and test modules to eliminate obsolete components in the LATR Pod. Design, integrate and test LATR software baseline upgrades. Design, integrate and test Participant Instrumentation Packages (PIP) modules to address obsolescence, high failure components and to improve operability and performance. Conduct and complete installation of the Ground System Rehosts. Conduct and complete security testing and assessment for LATR system certification and accreditation for Ground System Rehosts. Develop, test and integrate software and hardware modifications to system test sets. Develop, test and integrate LATR data translators. Conduct studies to identify sub-projects required through FY22. Complete ground system and PIP refresh sub-projects, in conjunction with, semi-annual system block upgrades. Conduct LATR Operational Security (OPSEC) Posture Improvements Sub-Project and Shipboard and Rotary Wing Technology Wing Upgrade (LSRTU).</p> <p>FY 2015 Accomplishments: Developed and tested LATR ground software version 5.9.0. Continue to develop LATR Shipboard and LSRTU.</p> <p>FY 2016 Plans: Develop and test LATR ground software version 6.0.0. Continue to develop LATR Shipboard and Rotary Wing Technology Upgrade (LSRTU).</p> <p>FY 2017 Base Plans: Develop and test LATR ground Software version 6.1.0. Continue to develop operational system improvements and solutions to eliminate LATR obsolescence issues. Increase engineering, logistics, and test efforts to finalize</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
LATR Shipboard Rotary Technology Upgrade (LSRTU) development, including Physical Configuration Audit, System Verification Review, Production Readiness Review, and Developmental Test events in advance of Milestone C. FY 2017 OCO Plans: N/A					
Title: TTR Articles: Description: Develop and test upgrades to the Joint Display Subsystem (JDS), Radar Acquisition Display Subsystem (RADS), and Electronic Warfare (EW) server. Develop and test upgrades to the Link-16 Interface, JDS, RADS, and EW server. FY 2015 Accomplishments: Developed and tested 2015.1 & 2015.2 upgrades to the JDS, RADS & EW Server. FY 2016 Plans: Develop and test 2016.1 & 2016.2 upgrades to the JDS, RADS & EW Server. With the exception of FY 15, TTR fields two software block upgrades per year to allow the JDS, EW Server, and RADS to remain in concert with evolving threat and tactical training requirements. FY 2017 Base Plans: Develop and test 2017.1 & 2017.2 upgrades to the JDS, RADS & EW Server to remain in concert with evolving threat and tactical training requirements. Develop operational systems improvements to the Rotary Wing Tracking System. FY 2017 OCO Plans: N/A	0.652	2.002	0.554	0.000	0.554
Title: Ocean Systems Articles: Description: Research, develop, and test technology improvements for fixed and portable Anti-Submarine Warfare (ASW) training ranges. FY 2015 Accomplishments:	0.000	0.250	0.241	0.000	0.241

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / <i>Consolidated Trng Sys Dev</i>	Project (Number/Name) 0604 / <i>Training Range & Instr Dev</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: Conduct analysis of advanced technical solutions for ASW range capability at Pacific Missile Range Facility (PMRF), Barking Sands, Hawaii and future ocean range locations.					
FY 2017 Base Plans: Conduct Analysis of advanced technical solutions for ASW range capability at Pacific Missile Range Facility (PMRF), Barking Sands, Hawaii and future ocean range locations. Research and investigate environmental parameters to support future project planning, and design fixed/portable range Concept of Operations (CONOPs).					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	3.199	3.502	3.310	0.000	3.310

C. Other Program Funding Summary (\$ in Millions)			FY 2017 Base	FY 2017 OCO	FY 2017 Total					Cost To Complete	Total Cost
Line Item	FY 2015	FY 2016				FY 2018	FY 2019	FY 2020	FY 2021		
• OPN/4204: <i>Weapons Range Support Equipment (WRSE)/LSRTU/Ocean Systems</i>	0.000	3.112	0.863	-	0.863	0.000	0.000	0.000	0.000	0.000	3.975

Remarks
Includes funding for Large Area Tracking Range Shipboard and Rotary Wing Technology Upgrade (LSRTU) and Ocean Systems. FY17 .364 for LSRTU and .500 for Ocean Systems.

D. Acquisition Strategy
The Training Range and Instrumentation Development (TRID) program is a non-ACAT program. The integrated program teams that develop new TRID capabilities include government and contractor engineering personnel.

E. Performance Metrics
Metric/Description:
Naval Air Warfare Center-Aircraft Division (NAWC-AD): # of Large Area Tracking Range (LATR) system product improvements and new capabilities. Successful application of system engineering processes. Design and development of improvements. Site acceptance of product improvements with no Priority 1 or 2 problem reports. Completion of 1 upgrade per year.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0204571N / <i>Consolidated Trng Sys Dev</i>	0604 / <i>Training Range & Instr Dev</i>

Jacobs Eng: # of LATR system product improvements and new capabilities. Successful design, development and testing of product improvements and new capabilities. Site acceptance of product improvements with no Priority 1 or 2 problem reports.

NAWC-Weapons Division (WD): # of Tactical Training range (TTR) upgrades per year. Successful application of system engineering processes. Design and development of improvements. Site acceptance of product improvements with no Priority 1 or 2 problem reports. Completion of 2 upgrade per year.

Jacobs Eng: # of TTR system product improvements and new capabilities. Successful design, development, and testing of product improvements and new capabilities. Site acceptance of product improvements with no Priority 1 or 2 problem reports.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	C/CPFF	JACOBS ENG : RIDGECREST, CA	10.161	1.216	Nov 2014	1.238	Jan 2016	1.525	Nov 2016	-		1.525	0.000	14.140	14.140
Hardware Development	WR	NSWC : CORONA, CA	0.000	0.350	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Development	WR	NUWC : NEWPORT, RI	0.000	0.000		0.250	Nov 2015	0.229	Nov 2016	-		0.229	Continuing	Continuing	Continuing
Software Development	C/CPFF	JACOBS ENG : RIDGECREST, CA	4.645	0.000		0.375	Jan 2016	0.130	Nov 2016	-		0.130	0.000	5.150	5.150
Software Development	WR	NAWC-AD : PAX RIVER, MD	7.059	0.631	Nov 2014	0.739	Nov 2015	0.589	Nov 2016	-		0.589	Continuing	Continuing	Continuing
Software Development	WR	NAWC-WD : POINT MUGU, CA	5.710	0.000		0.050	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Software Development	WR	NRL : WASHINGTON, DC	0.200	0.125	Nov 2014	0.100	Jan 2016	0.136	Nov 2016	-		0.136	Continuing	Continuing	Continuing
Prior Year Prod Dev No Longer Funded in the FYDP	Various	Various : Various	93.905	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			121.680	2.322		2.752		2.609		-		2.609	-	-	-

Remarks
Jacobs Engineering formerly Tybrin Corporation.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWC-AD : PAX RIVER, MD	0.463	0.325	Nov 2014	0.300	Nov 2015	0.312	Nov 2016	-		0.312	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWC-WD : CHINA LAKE, CA	0.185	0.052	Nov 2014	0.100	Nov 2015	0.022	Nov 2016	-		0.022	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : CORONA, CA	0.420	0.275	Nov 2014	0.100	Nov 2015	0.118	Nov 2016	-		0.118	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWC-WD : POINT MUGU, CA	0.000	0.025	Nov 2014	0.000		0.024	Nov 2016	-		0.024	0.000	0.049	0.049
Prior Year Support No Longer Funded in the FYDP	Various	Various : Various	10.576	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			11.644	0.677		0.500		0.476		-		0.476	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year T&E No Longer Funded in the FYDP	Various	Various : Various	5.299	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			5.299	0.000		0.000		0.000		-		0.000	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prog Mngt Sup	WR	NAWC-TSD : ORLANDO, FL	3.263	0.200	Nov 2014	0.250	Nov 2015	0.225	Nov 2016	-		0.225	Continuing	Continuing	Continuing
Subtotal			3.263	0.200		0.250		0.225		-		0.225	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		141.886	3.199	3.502	3.310	-	3.310	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Training Range & Instr Dev - Large Area Tracking Range	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acquisition Milestones																																
System Development																																
	LATR - 5.9 UPGRADE				LATR - 6.0 UPGRADE				LATR - 6.1 UPGRADE				LATR - 6.2 UPGRADE				LATR - 6.3 UPGRADE				LATR - 6.4 UPGRADE				LATR - 6.5 UPGRADE							
	LATR - SHIPBOARD/ROTARY WING TECH UPGRADE																															
Test & Evaluation																																
Production Milestones																																
Deliveries				LATR - 5.9 ▼				LATR - 6.0 ▼				LATR - 6.1 ▼				LATR - 6.2 ▼				LATR - 6.3 ▼				LATR - 6.4 ▼								LATR - 6.5 UPGRADE ▼
								LATR - SHIPBOARD/ROTARY WING TECH UPGRADE ▼																								

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Training Range & Instr Dev - Tactical Training Ranges	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
System Development																												
	TTR - 2015.1 + 2015.2 UPGRADE				TTR - 2016.1 + 2016.2 UPGRADE				TTR - 2017.1 + 2017.2 UPGRADE				TTR - 2018.1 + 2018.2 UPGRADE				TTR - 2019.1 + 2019.2 UPGRADE				TTR - 2020.1 + 2020.2 UPGRADE				TTR - 2021.1 + 2021.2 UPGRADE			
Test & Evaluation																												
Production Milestones																												
Deliveries				TTR - 2015.1 + 2015.2 ▼				TTR - 2016.1 + 2016.2 ▼				TTR - 2017.1 + 2017.2 ▼				TTR - 2018.1 + 2018.2 ▼				TTR - 2019.1 + 2019.2 ▼				TTR - 2020.1 + 2020.2 ▼				TTR - 2021.1 + 2021.2 UPGRADE ▼

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0204571N / Consolidated Trng Sys Dev

Project (Number/Name)
0604 / Training Range & Instr Dev

Ocean Systems	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
System Development																												
Test & Evaluation																												
Production Milestones																												
Deliveries																												

Next Gen Technolgy Development Phase 1 Next Gen Technolgy Development Phase 2 Next Gen Technolgy Development Phase 3 Next Gen Technolgy Development Phase 4 Next Gen Technolgy Development Phase 5 Next Gen Technolgy Development Phase 6

Phase 1 ▼ Phase 2 ▼ Phase 3 ▼ Phase 4 ▼ Phase 5 ▼ Phase 6 ▼

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Training Range & Instr Dev - Large Area Tracking Range				
System Development: LATR - 5.9 UPGRADE	1	2015	4	2015
System Development: LATR - 6.0 UPGRADE	1	2016	4	2016
System Development: LATR - 6.1 UPGRADE	1	2017	4	2017
System Development: LATR - 6.2 UPGRADE	1	2018	4	2018
System Development: LATR - 6.3 UPGRADE	1	2019	4	2019
System Development: LATR - 6.4 UPGRADE	1	2020	4	2020
System Development: LATR - 6.5 UPGRADE	1	2021	4	2021
System Development: LATR - SHIPBOARD/ROTARY WING TECH UPGRADE	1	2015	4	2016
Production Milestones: Deliveries: LATR - 5.9 UPGRADE	4	2015	4	2015
Production Milestones: Deliveries: LATR - 6.0 UPGRADE	4	2016	4	2016
Production Milestones: Deliveries: LATR - 6.1 UPGRADE	4	2017	4	2017
Production Milestones: Deliveries: LATR - 6.2 UPGRADE	4	2018	4	2018
Production Milestones: Deliveries: LATR - 6.3 UPGRADE	4	2019	4	2019
Production Milestones: Deliveries: LATR - 6.4 UPGRADE	4	2020	4	2020
Production Milestones: Deliveries: LATR - 6.5 UPGRADE	4	2021	4	2021
Production Milestones: Deliveries: LATR - SHIPBOARD/ROTARY WING TECH UPGRADE	4	2016	4	2016
Training Range & Instr Dev - Tactical Training Ranges				
System Development: TTR - 2015.1 + 2015.2 UPGRADE	1	2015	4	2015
System Development: TTR - 2016.1 + 2016.2 UPGRADE	1	2016	4	2016
System Development: TTR - 2017.1 + 2017.2 UPGRADE	1	2017	4	2017
System Development: TTR - 2018.1 + 2018.2 UPGRADE	1	2018	4	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 0604 / Training Range & Instr Dev
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
System Development: TTR - 2019.1 + 2019.2 UPGRADE	1	2019	4	2019
System Development: TTR - 2020.1 + 2020.2 UPGRADE	1	2020	4	2020
System Development: TTR - 2021.1 + 2021.2 UPGRADE	1	2021	4	2021
Production Milestones: Deliveries: TTR - 2015.1 + 2015.2 UPGRADE	4	2015	4	2015
Production Milestones: Deliveries: TTR - 2016.1 + 2016.2 UPGRADE	4	2016	4	2016
Production Milestones: Deliveries: TTR - 2017.1 + 2017.2 UPGRADE	4	2017	4	2017
Production Milestones: Deliveries: TTR - 2018.1 + 2018.2 UPGRADE	4	2018	4	2018
Production Milestones: Deliveries: TTR - 2019.1 + 2019.2 UPGRADE	4	2019	4	2019
Production Milestones: Deliveries: TTR - 2020.1 + 2020.2 UPGRADE	4	2020	4	2020
Production Milestones: Deliveries: TTR - 2021.1 + 2021.2 UPGRADE	4	2021	4	2021
<i>Ocean Systems</i>				
System Development: Next Gen Technolgy Development Phase 1	1	2016	4	2016
System Development: Next Gen Technolgy Development Phase 2	1	2017	4	2017
System Development: Next Gen Technolgy Development Phase 3	1	2018	4	2018
System Development: Next Gen Technolgy Development Phase 4	1	2019	4	2019
System Development: Next Gen Technolgy Development Phase 5	1	2020	4	2020
System Development: Next Gen Technolgy Development Phase 6	1	2021	4	2021
Production Milestones: Deliveries: Phase 1	4	2016	4	2016
Production Milestones: Deliveries: Phase 2	4	2017	4	2017
Production Milestones: Deliveries: Phase 3	4	2018	4	2018
Production Milestones: Deliveries: Phase 4	4	2019	4	2019
Production Milestones: Deliveries: Phase 5	4	2020	4	2020
Production Milestones: Deliveries: Phase 6	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev				Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1427: Surface Tactical Team Trainer (STTT)	80.857	16.366	9.954	12.289	-	12.289	10.647	9.543	9.796	10.034	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Surface Tactical Team Trainer project/BFTT Program provides enhancements and upgrades to the Total Ship Training Capability (TSTC) training components to support AEGIS and Ship Self Defense System (SSDS) needs for increased training capability and functionality during Fleet Synthetic Training (FST)/Live Virtual Constructive (LVC) events. The BFTT component develops new capabilities and integrates training capabilities developed by the AEGIS and SSDS TSTC into a consolidated integrated training system for use on AEGIS and SSDS ships. TSTC enhancements developed address current and future training requirements to align with the Combat System new and improved capabilities by implementing new functionality and by integrating capabilities being developed by both the AEGIS and SSDS Training Improvement Programs into a consolidated training system. TSTC developments and upgrades include the evolution to an open distributed architecture with maximum commonality across ship classes, integrating existing training systems, or leveraging capabilities developed by other programs.

TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F FST/LVC events.

TSTC integrated on SSDS provides the capability to complete system and operational level testing of the combat system.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Surface Tactical Team Trainer (STTT)	16.366	9.954	12.289	0.000	12.289
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continued Build 5.0, 5.1 and BFTT Advanced Training Domain (ATD) 1.0 developments required for CVN78, AEGIS Baseline 9.C2, and AEGIS Baseline 9 & 7.2 backfit. Integrated CVN78 Dual Band Radar and Cooperative Engagement Capability (CEC) Enhanced Trainer (CET). Completed Build 5.0 Test Readiness Review (TRR) and commenced Build 5.0 Test and Evaluation. Completed Build 5.1 System Functional Review (SFR) and Preliminary Design Review (PDR) and associated systems engineering and development analysis. Supported AEGIS Baseline 9.C2 PDR and SSDS development effort. Initiated Critical Design Review (CDR) development and systems engineering efforts to support FY17 AEGIS Baseline 9.C2 CDR. Initiated Interface Control Documents (ICD) development for hardware and software integration into 9C.2.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue and complete Build 5.0 testing and Combat System Certification to support SLQ-32 (V)6 SEWIP BLK II integration in AEGIS Baseline 9A.0/9.C1 and legacy AWS Baseline ships. Continue Build 5.1, TSTC and BFTT Advanced Training Domain (ATD) 1.0 development required to support CVN78 and AEGIS Baseline 9.C2 training capability. Complete Build 5.1 CDR and Test Readiness Review (TRR). Support CVN78 SSDS MK2 Mod 6C engineering tests at Wallops Island for BFTT Build 5.1 Integration and Combat System light off. Continue Combat Systems level Integration engineering for CVN78 Dual Band Radar and Cooperative Engagement Capability (CEC) Enhanced Trainer (CET) training capabilities. Complete ATD 1.0 CDR. Complete Build 5.0 Certification to support Baseline 9. Initiate software development for ATD 1.0 and necessary integration engineering to support Aegis Baseline 9.C2 TSTC development.</p> <p>Initiate development of requirements to support TSTC capability improvements to support tactical training requirements of AEGIS and SSDS ACB 20, to include training system modifications to support integration of the Air and Missile Defense Radar (AMDR) stimulation capability. Initiate study to determine method of simulating and integrating real world environments within shipboard sensors for Anti-Area / Area Denial (A2AD) training.</p> <p>Continue to modify TSTC training capability, as components are modernized or new components developed, into a common core system to eliminate redundancies between the AEGIS and SSDS.</p> <p>FY 2017 Base Plans: Continue TSTC, BFTT Build 5.1 and BFTT ATD 1.0 development required to support CVN78 and AEGIS Baseline 9.C2 training capability. Complete Build 5.1 testing and Certification for CVN 78 and AEGIS Baselines 9.A0/9.C1/9.C2. Complete ATD 1.0 CDR. Initiate software development for ATD 1.0 and necessary integration engineering to support Aegis Baseline 9.C2 TSTC development.</p> <p>Initiate development of requirements to support TSTC capability improvements to support tactical training requirements of AEGIS and SSDS ACB 20, to include training system modifications to support integration of the Air and Missile Defense Radar (AMDR) stimulation capability. Develop LVC methods of simulating and integrating real world environments within shipboard sensors for Anti-Area / Area Denial (A2AD) training.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	16.366	9.954	12.289	0.000	12.289

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 I 7	R-1 Program Element (Number/Name) PE 0204571N I Consolidated Trng Sys Dev	Project (Number/Name) 1427 I Surface Tactical Team Trainer (STTT)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN 2762: Other Training Equipment (Surface BFTT/TSTC portion only)	37.816	27.816	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	192.763
• 0604307N/3357: Aegis Training Improvement Program	8.766	14.677	10.843	-	10.843	7.838	6.582	5.082	5.184	0.000	62.705
• 0604755N/3358: SSDS Training Improvement Program	1.100	3.117	2.981	-	2.981	7.639	7.557	7.578	8.953	0.000	39.985
• OPN 5664: Other Training Equipment (Surface BFTT/TSTC portion only) New BLI FY17	0.000	0.000	27.351	-	27.351	30.556	28.344	28.807	29.385	0.000	144.443

Remarks

D. Acquisition Strategy

The BFTT acquisition strategy for system development utilizes the Advanced Capability Build (ACB) development model, as mandated by OPNAV. Incremental acquisition and fielding, utilizing commercial off-the-shelf technology to the extent possible, is in accordance with OPNAV LTR Ser N86/9U179029 dtd 31 Jul 09.

E. Performance Metrics

TSTC BFTT Core component will be developed to meet the following developmental milestones. These milestones are in close alignment with AEGIS BL9.C2 development milestones and also will support SSDS MK 2 development and integration events. (see R-4)

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	WR	NSWC Dam Neck : Dam Neck	14.300	0.292	Dec 2014	0.368	Dec 2015	0.497	Dec 2016	-		0.497	Continuing	Continuing	Continuing
Systems Engineering	WR	SEA02/NSWC Dam Neck/NSWC Dahlgren : NAVSEA/ Dam Neck/NSWC Dahlgren	15.682	6.601	Dec 2014	3.938	Dec 2015	3.799	Dec 2016	-		3.799	0.000	30.020	-
Subtotal			29.982	6.893		4.306		4.296		-		4.296	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	WR	NSWC Dam Neck/ SEA 02 : WR/REQN	33.843	5.834	Dec 2014	2.416	Dec 2015	4.803	Dec 2016	-		4.803	0.000	46.896	-
Subtotal			33.843	5.834		2.416		4.803		-		4.803	0.000	46.896	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NSWC Dam Neck/ SEA 02 : WR/REQN	9.506	1.725	Dec 2014	2.429	Dec 2015	1.957	Dec 2016	-		1.957	0.000	15.617	-
Subtotal			9.506	1.725		2.429		1.957		-		1.957	0.000	15.617	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	WR	NSWC Dam Neck/ SEA02 : WR/REQN	7.526	1.914	Dec 2014	0.803	Dec 2015	1.233	Dec 2016	-		1.233	0.000	11.476	-
Subtotal			7.526	1.914		0.803		1.233		-		1.233	0.000	11.476	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)
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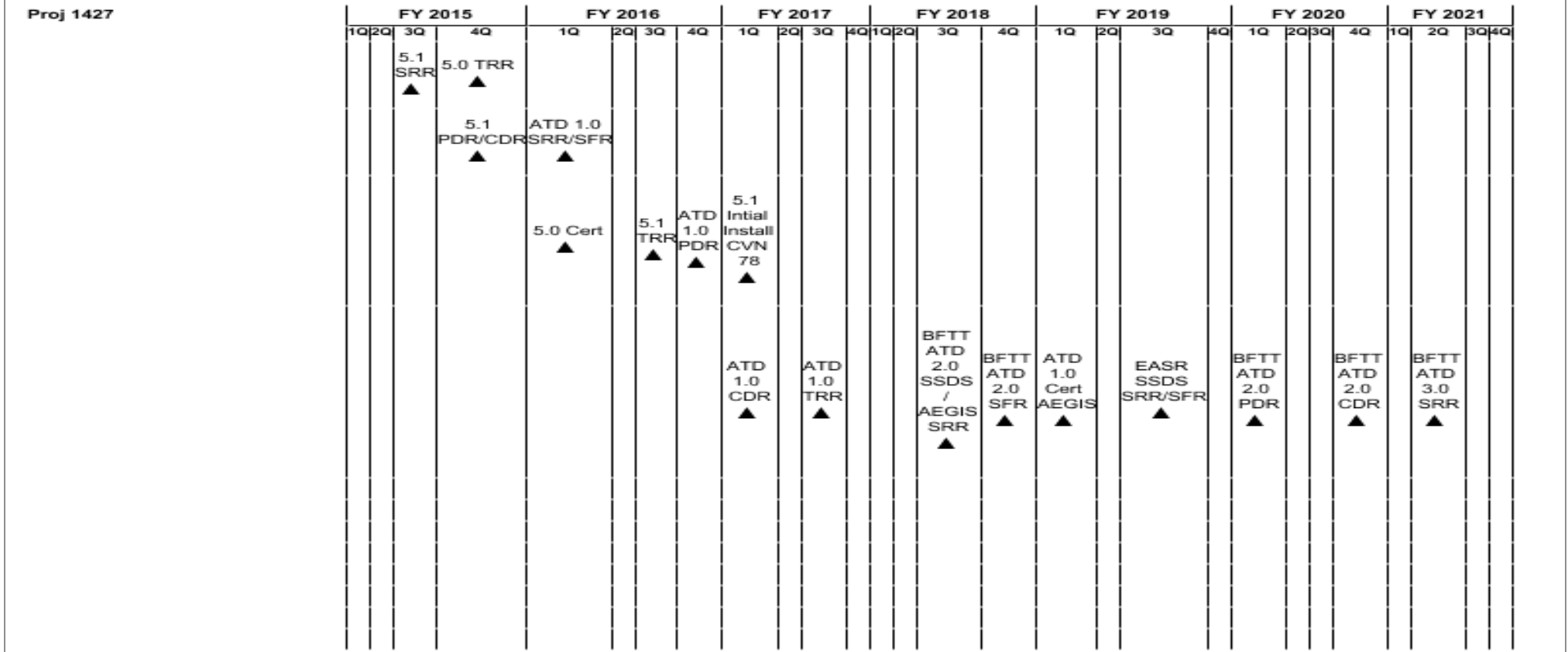
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	80.857	16.366	9.954	12.289	-	12.289	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 1427 / Surface Tactical Team Trainer (STTT)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1427				
BFTT 5.1 SRR	3	2015	3	2015
BFTT 5.0 TRR	4	2015	4	2015
BFTT 5.1 PDR/CDR	4	2015	4	2015
BFTT ATD 1.0 SRR/SFR	1	2016	1	2016
BFTT 5.0 Certification	1	2016	1	2016
BFTT 5.1 TRR	3	2016	3	2016
BFTT ATD 1.0 PDR	4	2016	4	2016
BFTT 5.1 Certification Intial Install CVN 78	1	2017	1	2017
BFTT ATD 1.0 CDR	1	2017	1	2017
BFTT ATD 1.0 TRR	3	2017	3	2017
BFTT ATD 2.0 for SSDS AND AEGIS SRR	3	2018	3	2018
BFTT ATD 2.0 SFR	4	2018	4	2018
BFTT ATD 1.0 Certification for AEGIS	1	2019	1	2019
EASR SSDS SRR/SFR	3	2019	3	2019
BFTT ATD 2.0 PDR	1	2020	1	2020
BFTT ATD 2.0 CDR	4	2020	4	2020
BFTT ATD 3.0 SRR	2	2021	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev				Project (Number/Name) 2124 / Air Warfare Training			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2124: Air Warfare Training	39.658	6.194	1.611	1.462	-	1.462	1.670	1.707	1.729	1.679	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project transitions new training and range system technologies for use in Naval Aviation training. Products from this effort are directly tied to the Navy Aviation Simulation Master Plan (NASMP), MH-60R/S master plan, Unmanned Aerial Systems (UAS) master plan, the Live Virtual Constructive (LVC) program, component technologies, including the Multiplex Data Bus Controller Translator Transmitter, F/A-18C-F Requirements Procurement Plan (RPP), open architecture implementation, multiple technology refresh efforts and the Multi-Mission Maritime Aircraft/P-8 programs. These efforts will support training optimization of future naval aviation training/preview/mission rehearsal systems (fixed, deployed, and unmanned). Tasks include: specification development to provide for common, modular, High Level Architecture compliant, high fidelity Distributed Mission Training and mission rehearsal capabilities ashore and afloat. Technologies to be developed and integrated include: intelligent semi-automated forces (SAF) technologies, automated performance measurement technology, advanced net-ready weapons simulation, Air to Air/Air to Ground, visual/sensor enhancement, sensor/weather server, common post mission assessment technologies, tablet mission preview technology, advanced visual-sensor technology, high resolution helmet mounted, and/or flat panel displays, 20-20 visual acuity image generation, NAVAIR Portable Source Initiative improvements, common correlated data set technologies, common link, common software/database reuse technologies, advanced environmental effects modeling, fused radar/infrared/electro-optic and acoustic sensor simulations, aerodynamic modeling, physics-based infra-red simulations, spatial disorientation research, comms degradation modeling, and final Test and Evaluation (T&E) within the Aviation Training Technology Integration Facility (ATTIF), Naval Air Warfare Center-Aircraft Division. This Manned-Flight Simulator (MFS) ATTIF capability provides a window to fleet aviators for critical comment, evaluation and fine tuning of new, interoperable, and innovative technologies such as LVC before final transition to the fleet. Naval Aviation Distributed Training Center, debrief/After Action Review (AAR), and intelligent training tools for the virtual environment are focused on human performance and trend analysis enhancements for fleet readiness and distributed mission training at all levels.

Metrics: These technology transitions seek to lower Total Ownership Costs of the training systems and life cycle costs, including: increasing software re-use, reduced instructor manning profiles, software-based fidelity enhancements and increased fleet readiness by enhancing overall system fidelity to the projected operating environments. NASMP readiness improvements are conservatively forecasted at 12-35% Training and Readiness improvement via synthetic environment upgrades and associated technology upgrades to stand-alone and networked simulators. Individual technology transition investments have routinely exceeded 300+% financial Return On Investment. Technology Readiness Levels, Training and Readiness, fleet readiness, and financial metrics are used.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: HUMAN/INSTRUCTIONAL SYSTEMS INTEGRATION	1.949	0.770	0.670	0.000	0.670
Articles:	-	-	-	-	-
Description: Develop common AAR and platform-unique post mission assessment, Intelligent Tactical SAF, and high fidelity simulator component technologies. AAR, and high fidelity components such as Intelligent SAF designs lower NASMP upgrade and simulator life-cycle costs. Integrate Voice-Capable SAF component					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>technologies, improve open common instructor interface effectiveness and provide for multi-SAF exercise utilization. Analyze, develop, and integrate common architecture components for F/A-18C-F, EA-18G, MH-60R/S, Unmanned Aerial Systems (UAS) platforms, E-2C/D & USMC mission areas, intelligent instructor operator components, automated performance measurement technologies, Tactical Aircraft/ Multi-Mission Maritime Aircraft/ Reduced Oxygen Breathing Device-Spatial Disorientation technologies/devices common graphic user interface initiatives, common threat system formats, Next Generation Threat System (NGTS) technology transitions, Joint SAF compatibility, cross platform post mission performance measurement, Multi-purpose Reconfigurable Maintenance Training Systems, (MRTS) and after action review/debrief innovations, thereby maximizing return on investment for instructional systems technology investments.</p> <p>FY 2015 Accomplishments: Provided continued development and support for Instructional System based brief/preview, debrief, and tactical assessment technologies for all Naval Aviation platforms, to include data and trend analysis. Provided technology in support of common, and open-architecture simulation product lines, UAS training, UAS common control station, and debrief visualizations.</p> <p>FY 2016 Plans: Provide continued support to the NAMRU research team to complete both Reduced Oxygen Breathing Device/Hypoxia system configuration, test and evaluation, and final prototyping development/support for the Spatial Disorientation family of systems to meet new curricula and requirements. Provide training station/instructional systems support for standard post-mission assessment software, tactical trend analysis and Common Simulation Product development.</p> <p>FY 2017 Base Plans: Continue planned fidelity improvements to Programs of Record such as Next Generation Threat System (NGTS), tactical behaviors, and rapid scenario development using both actual operational behaviors and simulated recordings for "Patterns-of-life" white shipping, and other large entity sets with realistic behaviors - develop for Maritime and TACAIR platforms. Continue development of Post Mission Assessment for Tactical Training (PMATT), Maritime, fixed and rotary wing, and investigate similar applications for Naval Aviation Distributed Training Center applications (NADTC). Perform Advanced Development Simulation (ADS) component enhancements, and Technology Readiness Assessments (TRA) in relevant environments.</p> <p>FY 2017 OCO Plans: N/A</p>					
Title: SENSORS AND ENVIRONMENT	1.943	0.640	0.487	0.000	0.487

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right">Articles:</p> <p>Description: Develop common and platform unique sensor, visual, and environmental simulation (atmospherics or acoustics) into fidelity upgrades with Commercial Off The Shelf and/or Government Off the Shelf (GOTS) Software. Perform risk reduction, advanced displays innovation, test and evaluation, integration, and production of Common Sensor Model, High Fidelity Active-Acoustics Sensor Operator Training, 3D Ocean effects, Anti-Submarine Warfare (ASW) acoustic fidelity assessments, 3D weather effects, 3D Ocean acoustic modeling, new Reduced Oxygen Breathing Device (ROBD)& Spatial Disorientation (SD), and legacy device technologies. Demonstrate GOTS capability for cost-effective database materialization, Material Properties Reference Dataset library, associated NAVAIR Portable Source Initiative specifications and processes for implementation on Distributed Mission Training, deployed trainers, legacy, and new visual system upgrade programs. In support of Navy Aviation Simulation Master Plan (NASMP) upgrade efforts, develop texture storage, sensor-environmental effects, NAVAIR Portable Source Initiative material reference processes/standards, automated technology applications for real time publishing, shadows, cultural lighting, combat, and weather effects and very high resolution visualization technologies, to include tablet-based mission preview for tactical aircrew.</p> <p>FY 2015 Accomplishments: Developed, tested, and demonstrated new platform and composite/MEU squadron mission preview, sensor prediction, CQ part-task training, and AAR technologies that improve individual, squadron, and wing readiness metrics. Provided GOTS/or COTS applications for platform unique, or common visual-sensor technology challenges for all phases of training or mission preview. Performed new sensor-fusion and synthetic vision technology development to meet fleet requirements, and emerging UAS CCS, or UAS-platform unique requirements.</p> <p>FY 2016 Plans: Support final acquisition plan documentation, specifications, and testing for the CQ mobility part task trainer prototypes, and for all after action/post-mission assessment technologies. Using sensor fusion, and simulation-based displacement mapping, provide enhanced technology development for low-level flight operations training over water environments, and Terrain-Following, flight training in all weather, sensor environments. Provide enhanced threat presentations with improved tactical behaviors for Next-Generation Threat System application.</p> <p>FY 2017 Base Plans: Complete PMATT increment I rollout for P-3C. Provide sensor and environmental fidelity improvements for both Anti-Submarine Warfare (ASW) missions areas, acoustic training, and General Training mission areas such as Spatial Disorientation (SD), and mixed gas hypoxia training in mission-specific crew stations, and scenarios.</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete analytical ocean improvement analyses, and associated roadmaps. Investigate Virtual Reality (VR) improvements and interface with fleet critical sensor and display systems.					

FY 2017 OCO Plans:
N/A

Title: LIVE VIRTUAL CONSTRUCTIVE (LVC), AND VISUALS	2.302	0.201	0.305	0.000	0.305
Articles:	-	-	-	-	-

Description: Air Warfare Training Development provides for risk mitigation and next generation platform, Unmanned Aerial Systems, Live Virtual Constructive (LVC) and associated visualization component development for Navy aviation distributed mission training, and distributed training centers (NADTC), as well as for stand-alone and small footprint deployable devices. Provided integrated capability assessment for Ranges, Experimentation products, and Training. (Atlantic Test Range, NAWCAD 5.4, Training Systems Division, and PMA205) Support the NASMP upgrade efforts and Type/Model/Series programs with advanced visual system display configurations requirements. Assess trainee cognitive requirements and the development and incorporation of next generation Live Virtual Constructive (LVC), Unmanned Aerial Systems (UAS) constructive and associated debrief/After Action Review (AAR) visualization component technologies. Additionally, Anti-Warfare Training Development (AWTD) provides for advanced virtual component fidelity improvements for Live Virtual Constructive capability (such as "Mobility" Part-Task Trainers and the Multiplex Data Bus Controller Translator Transmitter (MDBCTT)). LVC technologies will facilitate advanced, cost effective weapons and tactics training and emerging capability requirements in the Air-Sea battlespace and Naval Integrated Fire Control-Counter Air (NIFC-CA) capabilities development.

FY 2015 Accomplishments:
Provided support to incremental LVC component technology development, to enhance visual, sensor, environmental, motion, aerodynamics, and ocean fidelity for required training and readiness improvements. Provided man-in-the-loop Technology Readiness Level (TRL) assessment at Manned Flight Simulator (MFS), and assessed Distributed Mission Readiness Trainer-class systems, and other mobility focused training devices for improved fleet training, T&D metrics, and life-cycle cost reductions.

FY 2016 Plans:
Provide continued development and prototype Spatial Disorientation training system syllabus, visual system enhancements, and SD research. Provide Office of Naval Research LVC enhancements. Complete Multiplex

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Data Bus Controller Translator Transmitter initial integration/ demonstrations for F/A-18E/F embedded training capability.					
<i>FY 2017 Base Plans:</i> Provide analytical and developmental support for emergent programs of record in LVC, acoustic simulation environments, Warfighter performance assessment, threat system enhancements, Virtual Reality (VR), and sensor/visualization modeling. Provide man-in-the-loop /Technology Readiness Level (TRL) assessments at Manned Flight Simulator (MFS), and assess Distributed Mission Readiness Trainer (DMRT) family of systems, and other mobility-focused training devices for improved fleet training, Training and Readiness (T&R) metrics, and life-cycle cost reductions.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	6.194	1.611	1.462	0.000	1.462

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0705: COMMON GROUND EQUIPMENT - TRAINING	157.522	184.385	184.083	-	184.083	202.112	197.896	196.999	186.083	Continuing	Continuing

Remarks

D. Acquisition Strategy

Air Warfare Training Development (AWTD) is a 6.7 RDT&E joint technology transition program tied to Navy Aviation Simulation Master Plan (NASMP), USMC upgrades and the various platform simulation master plans with the purpose of transitioning advanced training and mission preview/rehearsal technologies. AWTD provides risk mitigation, test and evaluation, and prototype development for stand-alone, manned, un-manned, distributed, open systems and deployed training systems for the warfighter utilizing an Integrated Product Team approach and a combination of reimbursable and direct cite/cost-plus time and material (T&M) contracts.

E. Performance Metrics

Naval Air Warfare Center-Training Systems Division (NAWC-TSD): # of transitions to Fleet Platforms. For each transition, successful Technical Readiness Level (TRL) testing and device Ready for Training (RFT) to Fleet platforms. Seminal transition events are either RFT or tech-refresh Authority to Operate.
NAWC-Aircraft Division (AD): Complete TRL & compliance testing for NASMP and Information Assurance directives.

RSC, Inc.: Government acceptance of evaluation of Small Business Innovation Research (SBIR) device testing.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0204571N / <i>Consolidated Trng Sys Dev</i>	2124 / <i>Air Warfare Training</i>

Aptima, Inc.: Government acceptance of evaluation of SBIR device testing.

CTSI, Inc.: Government acceptance of evaluation of SBIR device testing and Multiplex Data Base Controller Translator Transmitter warfare testing.

AEGIS TECHNOLOGIES, Inc.: Government acceptance of BAA research of ocean modeling improvements in 3D layered propagation loss, and reverberation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	C/CPFF	RSC INC. : ORLANDO, FL	0.000	0.078	Mar 2015	0.000		0.000		-		0.000	0.000	0.078	0.078
Software Development	C/CPFF	RSC INC. : ORLANDO, FL	0.469	0.098	Jun 2015	0.300	Mar 2016	0.210	Mar 2017	-		0.210	0.000	1.077	1.077
Software Development	WR	NAWC-AD : PAX RIVER, MD	1.176	0.773	Nov 2014	0.200	Nov 2015	0.205	Nov 2016	-		0.205	Continuing	Continuing	Continuing
Software Development	WR	NAWC-TSD : ORLANDO, FL	19.367	2.883	Nov 2014	0.416	Nov 2015	0.426	Nov 2016	-		0.426	Continuing	Continuing	Continuing
Software Development	WR	NAMRU : DAYTON, OH	0.420	0.100	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Prod Dev No Longer Funded in the Budget or Out Years	Various	Various : Various	7.346	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			28.778	3.932		0.916		0.841		-		0.841	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	C/CPFF	ENGILITY INC. : LEXINGTON PARK, MD	0.343	1.707	Mar 2015	0.243	Mar 2016	0.216	Nov 2016	-		0.216	0.000	2.509	2.509
Prior Year Support No Longer Funded in the Budget or Out Years	Various	Various : Various	1.753	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			2.096	1.707		0.243		0.216		-		0.216	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWC AD : PAX RIVER, MD	7.004	0.380	Dec 2014	0.235	Nov 2015	0.205	Nov 2016	-		0.205	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev					Project (Number/Name) 2124 / Air Warfare Training				
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			7.004	0.380		0.235		0.205		-		0.205	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	METI CORP : PAX RIVER, MD	1.041	0.171	Nov 2014	0.210	Nov 2015	0.200	Nov 2016	-		0.200	0.000	1.622	1.622
Travel	Allot	NAVAIR : PAX RIVER, MD	0.527	0.004	Nov 2014	0.007	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Prior year Mgmt Sup no longer funded in the FYDP	Various	Various : Various	0.212	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			1.780	0.175		0.217		0.200		-		0.200	-	-	-
Project Cost Totals			39.658	6.194		1.611		1.462		-		1.462	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Human/Instructional Systems Integration																												
Acquisition Milestones																												
Systems Development	Common Instruction Systems/SAF and Unmanned Aerial Systems Interface Selection and Training Tech Dev																											
Test & Evaluation																												
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>APAARS ▼</p> <p>TACSAF ▼</p> </div> </div>																											
Production Milestones																												
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>APAARS ▼</p> </div> <div style="text-align: center;"> <p>P-3C INSTR. SYS/PMATT ▼</p> <p>P-8A INSTR. SYS/PMATT ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS TIER I/II ▼</p> <p>LVC INSTR. SYS ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS TIER 1/II ▼</p> <p>LVC INSTR. SYS ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS TIER I/II ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS TIER I/II ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS Tier I/II ▼</p> </div> <div style="text-align: center;"> <p>UAS INSTR. SYS Tier I/II ▼</p> </div> </div>																											

2017DON - 0204571N - 2124

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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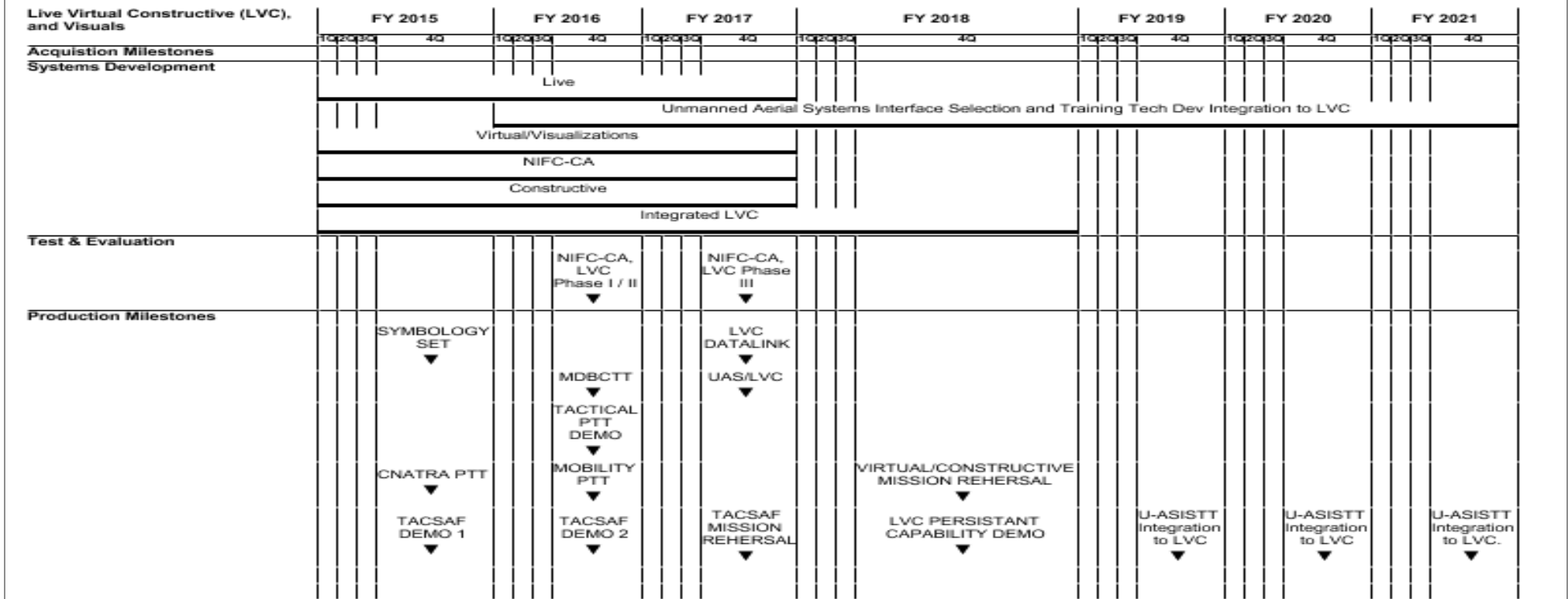
Sensors and Environment	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
Systems Development																												
	Common/Platform Sensors and Environment (Models/Tools)																											
Test & Evaluation																												
Production Milestones																												

2017DON - 0204571N - 2124

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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2017DON - 0204571N - 2124

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Human/Instructional Systems Integration</i>				
Systems Development: Common Instruction Systems/SAF and Unmanned Aerial Systems Interface Selection and Training Tech Dev	1	2015	4	2021
Test & Evaluation: APAARS	4	2015	4	2015
Test & Evaluation: TACSAF	4	2015	4	2015
Production Milestones: APAARS, 1ST ARTICLE	3	2015	3	2015
Production Milestones: P-3C INSTR. SYS PMATT, Increment I	4	2015	4	2015
Production Milestones: P-8A INSTR. SYS PMATT, Increment II	4	2015	4	2015
Production Milestones: UAS INSTR. SYS Tier I	4	2016	4	2016
Production Milestones: UAS INSTR. SYS Tier I/11	4	2017	4	2017
Production Milestones: LVC INSTR. SYS Component Technologies	4	2016	4	2016
Production Milestones: LVC INSTR SYS Component Technologies	4	2017	4	2017
Production Milestones: UAS INSTR. SYS Tier 1/II	4	2018	4	2018
Production Milestones: UAS INSTR SYS. Tier I/II	4	2019	4	2019
Production Milestones: UAS INSTR. SYS Tier 1/II (DYA DYM)	4	2020	4	2020
Production Milestones: UAS INSTR SYS Tier I/II	4	2021	4	2021
<i>Sensors and Environment</i>				
Systems Development: Common/Platform Sensors and Environment (Models/Tools)	1	2015	4	2021
Systems Development: Spatial Disorientation Technologies (Fixed/Rotary)	1	2015	4	2015
Systems Development: Atmospherics/Illusions Spatial Disorientation	1	2015	4	2015
Test & Evaluation: Spatial Disorientation Visual Systems Upgrade	4	2015	4	2015
Production Milestones: ROTARY WING HYPOXIA/SPATIAL DISORIENTATION (SD)	4	2015	4	2015
Production Milestones: FUSED SENSORS UAS/Tier 2	4	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: FUSED SENSORS UAS/Tier 1	4	2019	4	2019
Production Milestones: FUSED SENSORS UAS/Tier 2.	4	2020	4	2020
Production Milestones: FUSED SENSORS UAS/Tier 3	4	2021	4	2021
Live Virtual Constructive (LVC), and Visuals				
Systems Development: Live	1	2015	4	2017
Systems Development: Unmanned Aerial Systems Interface Selection and Training Tech Dev Integration to LVC	1	2016	4	2021
Systems Development: Virtual/SAF Visualizations	1	2015	4	2017
Systems Development: NIFC-CA FEA	1	2015	4	2017
Systems Development: Constructive	1	2015	4	2017
Systems Development: Integrated LVC Components	1	2015	4	2018
Test & Evaluation: NIFC-CA, LVC, Fallon, Phase I / II	4	2016	4	2016
Test & Evaluation: NIFC-CA, LVC, Fallon, Phase III	4	2017	4	2017
Production Milestones: SYMBOLOGY SET	4	2015	4	2015
Production Milestones: LVC DATALINK	4	2017	4	2017
Production Milestones: UAS/LVC Component Technologies	4	2017	4	2017
Production Milestones: MDBCTT Capability Demo	4	2016	4	2016
Production Milestones: TACTICAL PTT DEMO	4	2016	4	2016
Production Milestones: MOBILITY PTT (DMRT)	4	2016	4	2016
Production Milestones: MH-60R PTT	4	2015	4	2015
Production Milestones: VIRTUAL/CONSTRUCTIVE MISSION REHERSAL	4	2018	4	2018
Production Milestones: TACSAF DEMO 1	4	2015	4	2015
Production Milestones: TACSAF DEMO 2	4	2016	4	2016
Production Milestones: TACSAF MISSION REHERSAL	4	2017	4	2017
Production Milestones: LVC PERSISTANT CAPABILITY DEMO	4	2018	4	2018
Production Milestones: U-ASISTT Integration to LVC..	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 2124 / Air Warfare Training
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: U-ASISTT Integration to LVC	4	2020	4	2020
Production Milestones: U-ASISTT Integration to LVC.	4	2021	4	2021
Production Milestones: LVC NADTC Prototype	2	2015	2	2015
Production Milestones: LVC NADTC Prototype 2	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev				Project (Number/Name) 3093 / TACTS/LATR Replacement			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3093: TACTS/LATR Replacement	62.663	5.787	14.490	14.962	-	14.962	24.421	24.153	4.402	4.209	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Combat Training System (TCTS) will provide the Navy a replacement for the Tactical Aircrew Combat Training System (TACTS) and Large Area Tracking Range (LATR) systems. TCTS will also provide fleet deployable training for at-sea training and tactics development. By providing a rangeless capability, the system will greatly increase the area where live instrumented training can be conducted. Fielding of a pod system is complete at TACTS sites. The program incorporates an evolutionary development (incremental) towards an encrypted system capable of supporting a broad spectrum of naval platforms through weapons simulations, participant sensor stimulation, open architecture and an encrypted/long range secure data link.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: TACTS/LATR REPLACEMENT	5.787	14.490	14.962	0.000	14.962
Articles:	-	-	-	-	-
<p>Description: TCTS: Qualify and complete the Rangeless Pod system fielding for CVW-5 CVN installation, including the complete Integrated Logistics products and training. Define Test & Training Enabling Architecture (TENA) compliant interface between TCTS and an Advance Display System (ADS). Develop a Rack-Mounted subsystem for use on rotary wing and transport aircraft. Continue development of the encrypted data link. Develop related training range integration.</p> <p>FY 2015 Accomplishments: Completed RFP development, Acquisition Strategy, Acquisition Plan and brief MDA on status. Conducted Industry one-on-ones and released Draft RFP for Industry review.</p> <p>FY 2016 Plans: Conduct Source Selection on responses to the Request For Proposal. Conduct performance, cost, and technical readiness assessment on the proposals.</p> <p>FY 2017 Base Plans: Conduct MS B and Contract Award, Conduct Integrated Baseline Review to establish a Performance Measurement Baseline with the contractor. Program and engineering events will include a Systems Engineering</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3093 / TACTS/LATR Replacement
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Technical Review (SETR), Systems Requirements Review II (SRR II), Systems Functional Review (SFR), Integrated Baseline Review (IBR) and a Preliminary Design Review (PDR).					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	5.787	14.490	14.962	0.000	14.962

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/4204: Weapons Range Support Equipment (WRSE)/TCTS	3.817	0.000	4.032	-	4.032	3.792	3.877	3.986	4.079	Continuing	Continuing
• APN/0725: Other Production Charges/Tactical Combat Training System (TCTS)	5.630	2.455	0.860	-	0.860	1.458	1.468	21.796	22.066	Continuing	Continuing

Remarks

D. Acquisition Strategy

Tactical Combat Training System will employ an evolutionary incremental acquisition strategy. This strategy will provide for the development of a system that meets the Operational Requirements Document.

E. Performance Metrics

Contractor (TBD): National Security Agency (NSA) approved encrypted Data Link Transceiver (DLT). Successful Engineering Development Model testing of encrypted DLT requirements with NSA.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3093 / TACTS/LATR Replacement
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	TBD	TBD : TBD	0.000	0.000		0.000		9.872	Dec 2016	-		9.872	0.000	9.872	9.872
Software Development	C/CPFF	JACOBS ENGINEERING : RIDGECREST, CA	0.000	0.000		0.000		0.460	Dec 2016	-		0.460	0.000	0.460	0.460
Software Development	TBD	TBD : TBD	0.000	0.000		9.219	Dec 2016	0.000		-		0.000	0.000	9.219	9.219
Prior Year Prod Dev No Longer Funded in the Budget or Out Years	Various	Various : Various	10.901	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			10.901	0.000		9.219		10.332		-		10.332	-	-	-

Remarks
The change in contract award has been made to reflect a change in contracting strategy to competitive from the previous plan to award sole source to the vendor that developed and produced the unencrypted TCTS. Delay in contract award allows time for Government to conduct the competition.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	C/CPFF	JACOBS ENGINEERING : RIDGECREST, CA	2.718	1.253	Nov 2014	0.970	Nov 2015	0.970	Nov 2016	-		0.970	0.000	5.911	5.911
Systems Engineering	C/CPFF	MITRE CORP : MCLEAN, VA	0.000	0.198	Apr 2015	0.000		0.000		-		0.000	0.000	0.198	0.198
Systems Engineering	WR	NAWC-WD : CHINA LAKE, CA	0.454	0.229	Nov 2014	0.114	Nov 2015	0.097	Nov 2016	-		0.097	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWC-AD : PAX RIVER, MD	3.584	3.442	Nov 2014	3.507	Nov 2015	2.920	Nov 2016	-		2.920	Continuing	Continuing	Continuing
Prior Year Support No Longer Funded in the Budget or Out Years	Various	Various : Various	23.946	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			30.702	5.122		4.591		3.987		-		3.987	-	-	-

Remarks
Jacobs Engineering formerly Tybrin Corporation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3093 / TACTS/LATR Replacement
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWC-AD : PAX RIVER, MD	1.128	0.209	Nov 2014	0.265	Nov 2015	0.229	Nov 2016	-		0.229	Continuing	Continuing	Continuing
Prior Year T&E No Longer Funded in the Budget or Out Years	Various	Various : Various	3.425	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			4.553	0.209		0.265		0.229		-		0.229	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prog Mgmt Sup	WR	NAWC-AD : PAX RIVER, MD	0.381	0.430	Nov 2014	0.388	Nov 2015	0.388	Nov 2016	-		0.388	Continuing	Continuing	Continuing
Travel	Allot	NAVAIR : PAX RIVER, MD	0.067	0.026	Nov 2014	0.027	Nov 2015	0.026	Nov 2016	-		0.026	Continuing	Continuing	Continuing
Prior Year Mgmt No Longer Funded in the Budget or Out Years	Various	Various : Various	16.059	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			16.507	0.456		0.415		0.414		-		0.414	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			62.663	5.787	14.490	14.962	-	14.962	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3093 / TACTS/LATR Replacement
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TACTS/LATR Replacement	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acquisition Milestones									Encryption MS B ▲																Encryption MS C ▲							
Systems Development	Increment 2 Encrypted Datalink Capability																															
Test & Evaluation																																
Production Milestones																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3093 / TACTS/LATR Replacement
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TACTS/LATR Replacement				
Acquisition Milestones: Encryption MS B	1	2017	1	2017
Acquisition Milestones: Encryption MS C	4	2020	4	2020
Systems Development: Increment 2 Encrypted Datalink Capability	1	2015	1	2021
Production Milestones: Increment 2 Encrypted Datalink Capability	1	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev				Project (Number/Name) 3356 / High Fidelity Surface Trainers			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3356: High Fidelity Surface Trainers	9.492	6.814	4.768	6.570	-	6.570	1.582	0.000	0.000	0.000	0.000	29.226
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This line provides SEA 21 (PMS 339) funds for development of a High Fidelity Aegis Combined Integrated Air and Missile Defense (IAMD) and Anti-Submarine Warfare (ASW) Trainer (CIAT) to enable advanced warfare training (AWT) Phase II objectives to be accomplished ashore and to support Active and Passive Sonar Operations, Target Motion Analysis, Sonobuoy Localization, Command and Control, and execution of ASW Kill chain. Funds are provided for advanced component technology development, prototype evaluation, and technology readiness level assessment. Development of these trainers is in response to CNO Wholeness Review and COMNAVSURFOR requirements. This line also funds the research and development of advanced technologies to allow Close-In Weapon System (CIWS) 1B Baseline 2 integration at CSCS Dam Neck and Detachment West. This line also funds the research and development of advanced technologies to support BMD 5.1 and Command, Control, Communication, Computer, and Intelligence (C4I) Maintenance advanced technology upgrades to Aegis BMD Ashore Team Trainer at CSCS Unit Dam Neck.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Combined IAMD ASW Trainer (CIAT)	5.404	4.768	4.500	0.000	4.500
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Developed a high fidelity Combined IAMD and ASW Shore Based Trainer (SBT), research and develop advanced technologies necessary to introduce a SBT that will support scenario driven watch team practice of Standard Operating Procedures (SOPs), Tactics Techniques and Procedures (TTPs) and Pre-Planned Response (PPRs) against advanced threats in a realistic environment. Researched and developed technologies and interfaces which will enable Surface Anti-Submarine Warfare Synthetic Trainer (SAST) to be integrated with the shore based trainer. Researched and defined hardware that maximizes the benefits of COTS equipment and reuse of tactical software components. Researched and developed integration of models to allow for Navy Integrated Fire Control - Counter Air (NIFC-CA) trainer.					
FY 2016 Plans:					
Develop simulations and system architecture for the High Fidelity Combined IAMD & ASW Trainer (CIAT). Research and Develop Advanced technologies necessary to stimulate and emulate the AEGIS B/L 9 tactical system. Research and Develop a solution to virtualize AEGIS legacy tactical code to be able to re-host the tactical software on COTS hardware. These solutions will support scenario driven watch team practice of standard operating procedures (SOPs), Tactical Techniques and Procedures (TTPs) and Pre-Planned Response (PPRs) against advanced threats in a realistic environment. Research and Develop technologies and interfaces					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3356 / High Fidelity Surface Trainers

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>which will enable ASW trainers to be integrated with IAMD training system for integrated training events. Research and Develop models to allow for Navy Integrated Fire Control-Counter Air (NIFC-CA) training.</p> <p>FY 2017 Base Plans: Complete development of simulations and system architecture for the High Fidelity Combined IAMD & ASW Trainer (CIAT). Research and Develop Advanced technologies necessary to stimulate and emulate the AEGIS B/L 9 tactical system. Research and Develop a solution to virtualize AEGIS legacy tactical code to be able to re-host the tactical software on COTS hardware. These solutions will support scenario driven watch team practice of standard operating procedures (SOPs), Tactical Techniques and Procedures (TTPs) and Pre-Planned Response (PPRs) against advanced threats in a realistic environment. Research and Develop technologies and interfaces which will enable ASW trainers to be integrated with IAMD training system for integrated training events. Research and Develop models to allow for Navy Integrated Fire Control-Counter Air (NIFC-CA) training.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: CIWS 1B Baseline 2 Schoolhouse Integration</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Researched and developed advanced technologies to allow CIWS 1B Baseline 2 integration at CSCS Dam Neck and Det West to enable accurate training. This project introduced an upgrade to a training system which was insufficient for accurate training on the fleet configuration. Funds were provided for development of the technologies and test and evaluation of the integrated components.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	1.410	0.000	0.000	0.000	0.000
	-	-	-	-	-
<p>Title: Aegis BMD Ashore and Aegis BMD Ship Training</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	0.000	0.000	2.070	0.000	2.070
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3356 / High Fidelity Surface Trainers
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Research and develop advance technologies to allow BMD 5.1 and C4I maintenance advanced technology upgrades to Aegis BMD Ashore Team Trainer at CSCS Unit Dam Neck. Upgrade serves as an enabling technology for the execution of training directed in CNSF 8820 series BMD Qualification instruction which requires watch teams to certify on the same BMD baseline as the BMD platform they are assigned.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	6.814	4.768	6.570	0.000	6.570

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The software development for High Fidelity Surface Trainers is accounted for in this RDT&E line. All production kits are procured in OPN PE 0804731N BLI 5662. The software development and introduction for the CIWS 1B Baseline 2 Schoolhouse Integration is accounted for in this RDT&E line. This upgrade will provide an enabling technology to an existing training system. The software development and introduction for the BMD 5.1 and C4I maintenance advanced technology upgrades to Aegis BMD Ashore Team Trainer is accounted for in this RDT&E line. These upgrades will provide an enabling technology to an existing training system.

E. Performance Metrics

NSWC Dahlgren: Approved Combined IAMD and ASW Trainer (CIAT). Successful engineering development model (EDM) introducing advanced technologies necessary to simulate/stimulate the AEGIS Combat System elements required for operators stated in AEGIS Ashore Baseline 9 Weapons Specification (WS) 21200 series.

NSWC Dahlgren: Approved CIWS 1B Baseline 2 Schoolhouse Integration. 1) Accurate replication of CIWS 1B Baseline 2 configuration and functionality. 2) Successful introduction and test and evaluation to integrate and simulate the performance of Close In Weapons System (CIWS) 1B Baseline 2.

NAWCTSD: Approved BMD 5.1 and C4I maintenance advanced technology upgrades to the Aegis BMD Ashore Team Trainer.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / <i>Consolidated Trng Sys Dev</i>	Project (Number/Name) 3356 / <i>High Fidelity Surface Trainers</i>
<p>NSWC Carderock: Approved Combined IAMD & ASW Trainer (CIAT). Successful engineering development model introducing advanced technologies necessary to 1) simulate performance of AN/SQQ-89A(V)15 sonar system in alignment with fielding plan for initial Sonar software versions with capability to receive AN/SQQ-89A(V)15 coordinated routine modernizations and 2) replicate Combat Information Center (CIC) configuration and functionalities representative of AEGIS Baseline 9.</p> <p>NUWC Newport: Approved Combined IAMD & ASW Trainer (CIAT). Develop ASW components to be integrated in the CIAT system for Technology Requirements Model (TRM) simulation of own ship and threat torpedoes, and emulations of sonar devices.</p>		

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3356 / High Fidelity Surface Trainers
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 3356	
Software Development - Combined IAMD & ASW Trainer (CIAT)	
Software Development - CIWS 1B Baseline 2 Trainer	
Software Development - Aegis BMD Ashore and Aegis BMD ship training	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / Consolidated Trng Sys Dev	Project (Number/Name) 3356 / High Fidelity Surface Trainers
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3356				
Software Development - Combined IAMD & ASW Trainer (CIAT)	1	2015	2	2019
Software Development - CIWS 1B Baseline 2 Trainer	2	2015	1	2016
Software Development - Aegis BMD Ashore and Aegis BMD ship training	1	2017	2	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	PE 0204574N / <i>Cryptologic Direct Support</i>											
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	18.127	1.627	1.915	1.122	-	1.122	1.236	2.288	2.337	2.383	Continuing	Continuing
3091: <i>Advanced Cryptological Sys Eng (CCOP)</i>	18.127	1.627	1.915	1.122	-	1.122	1.236	2.288	2.337	2.383	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Cryptologic Systems Engineering - The Cryptologic Carry-on Program develops state-of-the-art signal acquisition software in response to Combatant Command requirements for a quick-reaction surface cryptologic carry-on capability. There are 124 cryptologic capable surface ships and shore sites in the current Navy inventory; each of these is a potential user of this carry-on equipment, depending on deployment schedules and the tempo of operations. In addition, numerous other Navy and Coast Guard platforms are potential users.

B. Program Change Summary (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.627	1.915	1.185	-	1.185
Current President's Budget	1.627	1.915	1.122	-	1.122
Total Adjustments	0.000	0.000	-0.063	-	-0.063
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.063	-	-0.063

Change Summary Explanation

Decrease in Cryptologic Direct Support by \$0.05M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>				Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3091: <i>Advanced Cryptological Sys Eng (CCOP)</i>	18.127	1.627	1.915	1.122	-	1.122	1.236	2.288	2.337	2.383	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Cryptologic Systems Engineering - Cryptologic Carry On Program (CCOP) develops state-of-the-art signal acquisition software in response to Combatant Command requirements for a quick-reaction surface, subsurface and airborne cryptologic carry-on capability. There are approximately 124 cryptologic capable surface ships and shore sites in the current Navy inventory; each is a potential user of this carry-on equipment, depending on deployment schedules and the tempo of operations. In addition, there are numerous subsurface and air platforms that are also potential users. This funding line will provide the resources to enable rapid transition of available Commercial Off-The-Shelf (COTS) and Government Off -The-Shelf (GOTS) technologies that apply to Fleet requirements for carry-on system functionalities. These technologies typically require various levels of integration to leverage on-board systems that provide system and mission management, product reporting, and data analysis. COTS/GOTS system documentation and training materials usually require adaptation or modification to meet fleet operator requirements, or entirely new training materials may need to be developed. Before deployment for operational use, systems must be systematically tested to ensure suitable and reliable operation, tested for network vulnerabilities if connected to shipboard Local Area Networks, and tested relative to interoperability requirements. Certification testing is conducted to meet Office of Naval Intelligence security requirements and network testing is conducted in accordance with Information Technology (IT) requirements to allow connection to Navy networks. Funding will also provide resources to address rapid deployment of enhancements or improvements to the common hardware and/or software baseline of all other carry-on subsystems to meet emergent requirements.

FY17 funds will continue to integrate, test, and document identified COTS and GOTS technologies and subsystems that meet emergent and on-going Fleet requirements as specified in the Signals of Interest (SOI) and target threat list. Funds will continue to develop upgrades to existing systems and subsystems according to Fleet requirements. Funds will aid the development of new signal processing algorithms and software based solutions to enable rapid transition to permanently installed Ship's Signal Exploitation Space (SSES) systems and the research of self contained small form factor systems for Patrol craft and other small units.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Advanced Cryptological Sys Eng - CCOP	1.157	1.915	1.122	0.000	1.122
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Continued to integrate, test and document identified COTS and GOTS technologies and subsystems that met emergent and on-going Fleet requirements as specified in the SOI and targeted threat list. Continued to develop					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>	Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>upgrades to existing systems and subsystems according to Fleet requirements. Continued the development of new signal processing algorithms and software based solutions to enable rapid transition.</p> <p>FY 2016 Plans: Continue to integrate, test and document identified COTS and GOTS technologies and subsystems that meet emergent and on-going Fleet requirements as specified in the SOI and target threat list. Continue to develop upgrades to existing systems and subsystems according to Fleet requirements. Continue the development of new signal processing algorithms and software based solutions to enable rapid transition to permanently installed SSES systems and the research of self contained small form factor systems for Patrol craft and other small units. Develop enhanced Red Falcon systems to combat future SOI.</p> <p>FY 2017 Base Plans: Continue to integrate, test and document identified COTS and GOTS technologies and subsystems that meet emergent and on-going Fleet requirements as specified in the SOI and target threat list. Continue to develop upgrades to existing systems and subsystems according to Fleet requirements. Continue the development of new signal processing algorithms and software based solutions to enable rapid transition.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Advanced Cryptological Sys Eng - CCOP Red Falcon OCO</p> <p align="right">Articles:</p>	0.470	0.000	0.000	0.000	0.000
<p>FY 2015 Accomplishments: Developed enhanced Red Falcon systems which will provide additional processing and collection of simultaneous targets (additional details held at a higher classification).</p> <p>FY 2016 Plans: In FY16, Red Falcon requirements transition to baseline under the Advanced Cryptological Systems Engineering line.</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	1.627	1.915	1.122	0.000	1.122

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>	Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPN / 3501: <i>Cryptologic Communications Equipment</i>	11.502	11.433	21.098	-	21.098	10.498	10.669	10.927	11.150	0.000	136.329

Remarks

D. Acquisition Strategy

Acquisition, management, and contracting strategies are to support engineering and manufacturing development by providing funds to Space and Naval Warfare (SPAWAR) Systems Centers Atlantic and Pacific, and miscellaneous contractors with management oversight by SPAWAR.

E. Performance Metrics

Cryptologic Carry On Program (CCOP) will deliver state-of-the-art signal acquisition software for CCOP systems in response to Combatant Command requirements for a quick-reaction surface, subsurface and airborne cryptologic carry-on capability.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016				
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0204574N / Cryptologic Direct Support				Project (Number/Name) 3091 / Advanced Cryptological Sys Eng (CCOP)								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Software Development	Various	Various : Various	6.109	0.000		0.000		0.000		-		0.000	0.000	6.109	-	
Software Development	C/CPFF	Classified Contract : Classified Contract	3.221	1.011	Dec 2014	1.252	Dec 2015	0.676	Dec 2016	-		0.676	Continuing	Continuing	Continuing	
Software Development	WR	SSC PAC : San Diego, CA	2.056	0.092	Nov 2014	0.100	Nov 2015	0.067	Nov 2016	-		0.067	Continuing	Continuing	Continuing	
Software Development	WR	SSC LANT : Charleston, SC	1.205	0.204	Nov 2014	0.205	Nov 2015	0.150	Nov 2016	-		0.150	Continuing	Continuing	Continuing	
Subtotal			12.591	1.307		1.557		0.893		-		0.893	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Systems Engineering	Various	Various : Various	1.915	0.000		0.000		0.000		-		0.000	0.000	1.915	-	
Systems Engineering	C/CPFF	Classified Contract : Classified Contract	1.057	0.187	Dec 2014	0.214	Dec 2015	0.133	Dec 2016	-		0.133	Continuing	Continuing	Continuing	
Subtotal			2.972	0.187		0.214		0.133		-		0.133	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	C/CPFF	Classified Contract : Classified Contract	0.513	0.000		0.000		0.000		-		0.000	0.000	0.513	-	
Developmental Test & Evaluation	WR	NPGS : Monterey, CA	0.159	0.032	Apr 2015	0.035	Apr 2016	0.023	Apr 2017	-		0.023	Continuing	Continuing	Continuing	
Developmental Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	0.139	0.032	Apr 2015	0.035	Apr 2016	0.023	Apr 2017	-		0.023	Continuing	Continuing	Continuing	
Subtotal			0.811	0.064		0.070		0.046		-		0.046	-	-	-	

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>	Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>

Exhibit R-4, RDT&E Program Schedule Profile	DATE: February 2016
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Appropriation/Budget Activity RDT&E, N / BA 7	Program Element Name and Number 0204574N Cryptologic Direct Support	Project Name and Number Advanced Cryptologic Systems Engineering (CCOP) / 3091
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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prototype Phase	■				■				□				□				□				□				□			
System Development	▲ SDR				△ SDR				△ SDR				△ SDR				△ SDR				△ SDR				△ SDR			
Software Delivery					▲				△				△				△				△				△			
T&E Milestones					OA				OA				OA				OA				OA				OA			
Operational Assessment					▲				△				△				△				△				△			

Exhibit R-4, Program Schedule Profile

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>	Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3091				
Prototype Phase - 2015	1	2015	4	2015
Prototype Phase - 2016	1	2016	4	2016
Prototype Phase - 2017	1	2017	4	2017
Prototype Phase - 2018	1	2018	4	2018
Prototype Phase - 2019	1	2019	4	2019
Prototype Phase - 2020	1	2020	4	2020
Prototype Phase - 2021	1	2021	4	2021
System Design Review (SDR) - 2015	2	2015	2	2015
System Design Review (SDR) - 2016	2	2016	2	2016
System Design Review (SDR) - 2017	2	2017	2	2017
System Design Review (SDR) - 2018	2	2018	2	2018
System Design Review (SDR) - 2019	2	2019	2	2019
System Design Review (SDR) - 2020	2	2020	2	2020
System Design Review (SDR) - 2021	2	2021	2	2021
Software Delivery - 2015	3	2015	4	2015
Software Delivery - 2016	3	2016	4	2016
Software Delivery - 2017	3	2017	4	2017
Software Delivery - 2018	3	2018	4	2018
Software Delivery - 2019	3	2019	4	2019
Software Delivery - 2020	3	2020	4	2020
Software Delivery - 2021	3	2021	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / <i>Cryptologic Direct Support</i>	Project (Number/Name) 3091 / <i>Advanced Cryptological Sys Eng (CCOP)</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Operational Assessment (OA) - 2015	4	2015	4	2015
Operational Assessment (OA) - 2016	4	2016	4	2016
Operational Assessment (OA) - 2017	4	2017	4	2017
Operational Assessment (OA) - 2018	4	2018	4	2018
Operational Assessment (OA) - 2019	4	2019	4	2019
Operational Assessment (OA) - 2020	4	2020	4	2020
Operational Assessment (OA) - 2021	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1.654	15.993	46.403	99.998	-	99.998	107.905	129.528	92.746	87.920	Continuing	Continuing
2263: <i>Information Warfare System</i>	1.654	15.993	46.403	99.998	-	99.998	107.905	129.528	92.746	87.920	Continuing	Continuing

A. Mission Description and Budget Item Justification

Research, assess, and develop information warfare capabilities.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	16.567	46.609	124.058	-	124.058
Current President's Budget	15.993	46.403	99.998	-	99.998
Total Adjustments	-0.574	-0.206	-24.060	-	-24.060
• Congressional General Reductions	-	-0.206			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.574	0.000			
• Program Adjustments	0.000	0.000	-44.830	-	-44.830
• Rate/Misc Adjustments	0.000	0.000	20.770	-	20.770

Change Summary Explanation

Decrease in Elect Warfare Readiness Support by \$3.1M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>				Project (Number/Name) 2263 / <i>Information Warfare System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2263: <i>Information Warfare System</i>	1.654	15.993	46.403	99.998	-	99.998	107.905	129.528	92.746	87.920	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Information Operations (IO) Counter Measure Capability Research and Development: Develops software to account for antenna modeling, weather calculations, radio frequency modeling, signals mapping and terrain modeling for warfighter use in configuring optimal Electronic Attack (EA) from afloat.

Maritime Cryptologic Systems for the 21st Century Systems Development and Support: Develops and fields spiral Electronic Support, and cyber capabilities against U.S. Navy's prioritized signals, networks, and target sets. EA capabilities will be integrated into a software architecture baseline that is deployed on subsurface, airborne and surface Information Operations (IO) platforms (Classic Troll, Banshee and Ships Signal Exploitation Equipment Increment E and Increment F) sponsored Pacific Sail (PACSAIL) research project. Signal Descriptor File (SDF) Configuration Management Authority (SCMA) is the technical lead for the development, testing and validation of electronic support and electronic attack techniques for Maritime Cryptologic Systems in support of Navy-wide Information Operations planning.

Research, Analysis and Research and Development Technical Support: Conducts vulnerability analysis and reverse engineering on emerging threats and targets and provides specialized technical, engineering and management capabilities to the program management office.

Computer Network Operations: Funds development and testing of computer networks for modeling, simulation, and tailoring of Cyber capabilities. Develops specific Cyber tools, techniques, and operators in support of Fleet Cyber Command and Commander, TENTH Fleet requirements. (Specific development details held at a higher classification level). Conducts vulnerability analyses and reverse engineering on improvised explosive devices (Specific details held at a higher classification level)

Task Force Cyber Awakening (TFCA), provides cyber security investments to expand Operation Rolling Tide (ORT) approach to address near term and executable vulnerabilities across Platform IT (PIT) capabilities. These projects and capabilities include the studies and analysis to support PIT improvements to ensure systems are optimally configured to enhance Navy's ability to maneuver in this expanding environment.

Mocking Jay: Analytical and engineering effort to develop cyber capabilities in the maritime domain. Enables development of new operating systems to ensure access and cyber weapons delivery. (Specific details held at a higher classification level)

Maritime Cyber Operations: Analytical and engineering effort to develop cyber capabilities in the maritime domain. Funds additional development and testing of computer networks for vulnerability analysis, reverse engineering and simulation systems, and closed development networks. (Specific details held at a higher classification level)

Twisted Web: A developmental capability that improves Fleet ability to safely operate in all ocean areas by reducing adversary capability to engage kinetically. Funds risk reduction and system engineering development for project initiation.(Specific details held at a higher classification level)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Electronic Warfare / Information Operations (IO) Countermeasure Capability Research & Development</p> <p align="right">Articles:</p> <p>Description: Description: Information Operations (IO) Counter Measure Capability Research and Development: Develops and tests IO Countermeasure capabilities across various platforms. Develops specific waveforms to attack adversary systems. Develops and uses modeling and simulation techniques to prototype and test emergent waveforms.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> *Conduct collection efforts in support of capability development (details held at a higher classification level) *Site (VAL) infrastructure updates to support additional collection efforts, further technical understanding, and capability development (details held at a higher classification level) *Measures of Effectiveness (MOE) software development and Graphical User Interface (GUI) updates (details held at a higher classification level) *Provide technical information to increase effectiveness of Information Operations (IO) systems development/ planning and situational awareness (details held at a higher classification level) *Conduct search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis (details held at a higher classification level) <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> *Continue to conduct collection efforts in support of capability development *Additional Site infrastructure updates to support collection efforts, further technical understanding, and capability development *Continue to provide technical information to increase effectiveness of Information Operations (IO) systems development/planning and situational awareness *Continue to conduct search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis *Technical, engineering, and intelligence related studies. *Leverage existing capabilities to characterize evolving adversary capabilities. *Evaluation of Fleet capabilities and operations that affect system specifications 	10.984	19.631	22.408	0.000	22.408
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>*Develop and use modeling and simulation techniques to characterize operating environment.</p> <p>FY 2017 Base Plans:</p> <p>*Develop and test capability in a maritime operational environment in order to integrate into standard US Navy shipboard systems and show initial proof of concept in a real world environment.</p> <p>*Continue to conduct search and collection efforts against high priority adversary systems for target development and to support countermeasure design.</p> <p>*Procurement of additional RF front end systems to expand search survey and collection efforts, further technical understanding, and capability development</p> <p>*Continue to provide technical information to increase effectiveness of Information Operations (IO) systems development/ planning and situational awareness</p> <p>*Maintenance support for continued search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis. This allows a more thorough understanding of adversary TTP's and systems to develop effective countermeasures.</p> <p>* Initial technology engineering and design of new countermeasure systems/capabilities.</p> <p>* Planned S2F operational/maritime testing for FY17</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Electronic Warfare Readiness/MCS-21 Systems Development</p> <p align="right">Articles:</p> <p>Description: Description: Maritime Cryptologic Systems for the 21st Century Systems Development: Develops and fields spiral Electronic Support (ES), Electronic Attack (EA) and cyber capabilities against Fleet Forces Command prioritized signals, networks and target sets. Capabilities will be integrated into a software architecture baseline that is deployed on subsurface, airborne and surface Information Operations platforms (Classic Troll, Banshee and Ships Signal Exploitation Equipment Increment E and F). Signal Descriptor File (SDF) Configuration Management Authority (SCMA) is the technical lead for the development, testing and</p>	0.301	3.502	3.035	0.000	3.035
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>validation of ES and EA techniques for Maritime Cryptologic Systems in support of Navy-wide Information Operations planning.</p> <p><i>FY 2015 Accomplishments:</i></p> <ul style="list-style-type: none"> *Redirect internal funding to reduce risk created by elimination of funds from other organizations to support SCMA . *Upgrade current SDF development and validation systems to maintain concurrency with systems on maritime platforms. *Continue IW/IO EA capability development & integration (Details held at higher classification level) *Continue specific wave form (EA) Research and Analysis (Details held at higher classification level). *Continue IW/IO EA capability development & integration into POR systems (Details held at higher classification level) *Develop Initial Capability for Remote SDF development *Continue ES (SDF) Research, Development and Analysis (Details held at higher classification level). *Develop a capability to rapidly demodulate and decode FFC priority signals. <p><i>FY 2016 Plans:</i></p> <ul style="list-style-type: none"> *Deploy a SDF Remoting capability enabling SDF creation across the globe at eight Signal Analysis Labs with Initial Operational Capability *Develop and test ES capabilities across various platforms. *Develop and test IO Countermeasures capabilities across various platforms. *Purchase a system to support next generation electronic support and electronic attack capability development *Develop specific waveforms to attack adversary systems. *Develop and use modeling and simulations techniques to prototype and test emergent waveforms. *Modeling and Simulation Lab (Applied/projected level of effort). *IW/IO/EA capability development (Details held at a higher classification level). *Waveform Weapon Development. *Increase the number of priority signals that can be demodulated and decoded. *New Project Kickoff (SCMA) - signal descriptor file (SDF). Configuration Management Authority <p><i>FY 2017 Base Plans:</i></p> <ul style="list-style-type: none"> *Develop and test ES capabilities across various platforms. *Develop and test IO Countermeasures capabilities across various platforms. *Develop specific waveforms to attack adversary systems. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>*Develop and use modeling and simulations techniques to prototype and test emergent waveforms.</p> <p>*Modeling and Simulation Lab (Applied/projected level of effort).</p> <p>*IW/IO/EA capability development (Details held at a higher classification level)</p> <p>*Waveform Weapon Development.</p> <p>*Upgrade current SDF development and validation systems to maintain concurrency with systems on maritime platforms.</p> <p>*Purchase a system to support next generation electronic support and electronic attack capability development</p> <p>*Increase development and testing of electronic attack capabilities across maritime platforms</p> <p>*Upgrade systems and infrastructure to support next generation electronic support and electronic attack capability development</p> <p>*Full Operating Capability for Remoted SDF capability</p> <p>*Increase the number of priority signals that can be demodulated and decoded.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Electronic Warfare/Research, Analysis and R&D Technical Support</p> <p align="right">Articles:</p> <p>Description: Description: Research, Analysis, and Research and Development Technical Support: Conducts vulnerability analysis and reverse engineering on emerging threats and targets and provides specialized technical, engineering and management capabilities to the program management office. (Specific details held at a higher classification level)</p> <p>FY 2015 Accomplishments:</p> <p>*Conduct vulnerability analysis and reverse engineering on emerging threats and targets and provide specialized technical, engineering and management capabilities to the program management office. (Specific details held at a higher classification level).</p> <p>*Technical and intelligence related studies and contractor engineering, technical and management capabilities.</p> <p>*Research and Analysis (Details held at higher classification level).</p> <p>FY 2016 Plans:</p> <p>*Conduct vulnerability analysis and reverse engineering on emerging threats and targets and provide specialized technical, engineering and management capabilities to the program management office. (Specific details held at a higher classification level).</p>	1.550	4.509	5.255	0.000	5.255
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
<p>*Technical and intelligence related studies and contractor engineering, technical and management capabilities. *Research and Analysis (Details held at higher classification level).</p> <p>FY 2017 Base Plans: *Develop and test IO Countermeasures capabilities across various platforms. *Develop specific waveforms to attack adversary systems. *Develop and use modeling and simulations techniques to prototype and test emergent waveforms. *Modeling and Simulation Lab (Applied/projected level of effort). *Information Warfare (IW) / Information Operations (IO) Electronic Attack (EA) capability development (Details held at a higher classification level). *Waveform Weapon Development.</p> <p>FY 2017 OCO Plans: N/A</p>					
Title: Electronic Warfare/Computer Network Operations (CNO)					
Articles:					
	1.658	4.961	4.769	0.000	4.769
	-	-	-	-	-
<p>Description: Description: Computer Network Operations (CNO): Conducts vulnerability analysis and reverse engineering on emerging threats and targets and provides specialized technical, engineering and management capabilities to the program management office. (Specific details held at a higher classification level.) Computer Network Operations: Funds development and testing of computer networks for modeling, simulation, and tailoring of Cyber capabilities. Develop specific Cyber tools, techniques, and operators in support of Fleet Cyber Command and Commander, TENTH Fleet requirements (Specific development details held at a higher classification level). Conduct vulnerability analysis and reverse engineering on improvised explosive devices (Specific details held at a higher classification level). Maritime Cyber Operations: Analytical and engineering effort to develop cyber capabilities in the maritime domain. Funds additional development and testing of computer networks for vulnerability analysis, reverse engineering and simulation systems, and closed development networks. Details can be provided separately in an appropriate environment.</p> <p>FY 2015 Accomplishments: *Develop Cyber tools, techniques, and operators in support of Fleet Cyber Command and Commander, TENTH Fleet requirements. (Specific development details held at a higher classification level). * Software development to increase speed for virtual testing. * Delivery and installation of software. *CNO Research and Development Integration Testing Facility.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>*Computer Network Attack Capabilities (Details held at a higher classification level).</p> <p>*Demonstration of Advanced Computer Network Operations Concept (Details held at a higher classification level).</p> <p>FY 2016 Plans:</p> <p>*Software development for adaptation to and utilization of modern technologies.</p> <p>*Software development for collaboration and synchronization with other Navy projects;</p> <p>*Coordinate with USCYBERCOM J9 for targeting opportunities (Details held at higher classification level).</p> <p>*Reverse engineer assets (Details held at higher classification level).</p> <p>*Develop effective countermeasures (Details held at higher classification level).</p> <p>*Provide specialized training courses (Details held at higher classification level).</p> <p>FY 2017 Base Plans:</p> <p>*Develop and test IO Countermeasures capabilities across various platforms.</p> <p>*Develop specific waveforms to attack adversary systems.</p> <p>*Develop and use modeling and simulations techniques to prototype and test emergent waveforms.</p> <p>*Modeling and Simulation Lab (Applied/projected level of effort).</p> <p>*Information Warfare (IW) / Information Operations (IO) Electronic Attack (EA) capability development (Details held at a higher classification level).</p> <p>*Coordinate with USCYBERCOM J9 for targeting opportunities (Details held at higher classification level).</p> <p>*Reverse engineer assets (Details held at higher classification level).</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
<p>Title: Twisted Web</p> <p align="right">Articles:</p> <p>Description: Description: Twisted Web: A developmental capability that improves Fleet ability to safely operate in all ocean areas by reducing adversary capability to engage kinetically Funds risk reduction and system engineering development for project initiation. Details available at classified level.</p> <p>FY 2015 Accomplishments:</p> <p>*Risk Reduction Efforts ahead of FY2016 project kickoff</p> <p>*Conduct collection efforts in support of capability development (details held at a higher classification level)</p>	0.750 -	3.000 -	40.154 -	0.000 -	40.154 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>*Site (VAL) infrastructure updates to support additional collection efforts, further technical understanding, and capability development (details held at a higher classification level)</p> <p>*Measures of Effectiveness (MOE) software development and Graphical User Interface (GUI) updates (details held at a higher classification level)</p> <p>*Provide technical information to increase effectiveness of Information Operations (IO) systems development/ planning and situational awareness (details held at a higher classification level)</p> <p>*Conduct search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis (details held at a higher classification level)</p> <p>FY 2016 Plans:</p> <p>*New project kickoff</p> <p>*Continue to conduct collection efforts in support of capability development</p> <p>*Additional Site infrastructure updates to support collection efforts, further technical understanding, and capability development</p> <p>*Continue to provide technical information to increase effectiveness of Information Operations (IO) systems development/planning and situational awareness</p> <p>*Continue to conduct search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis</p> <p>*Technical, engineering, and intelligence related studies.</p> <p>*Leverage existing capabilities to characterize evolving adversary capabilities.</p> <p>*Evaluation of Fleet capabilities and operations that affect system specifications</p> <p>*Develop and use modeling and simulation techniques to prototype system and characterize operating environment.</p> <p>FY 2017 Base Plans:</p> <p>*OSD directed ACAT II program which will meet milestone B and C</p> <p>*Prime contract kickoff to begin development of critical system components</p> <p>*Initial technology engineering and design (NRE) cost to include substantial hardware and software development and testing</p> <p>*Modelling and simulation of critical system components</p> <p>*Site surveys and facilities development (fitting electronic equipment racks, equipment, equipment components, computers)</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>desks, workstations, etc. large enough to support the R&D efforts required for this project) *Continue to provide technical information to increase effectiveness of Information Operations (IO) systems development/ planning and situational awareness *Continue to conduct search operations to provide strategic Indications and Warnings (I&W) and OPINTEL analysis. (Details held at a higher classification)</p> <p>FY 2017 OCO Plans: N/A</p>					
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<p>Title: TFCA</p> <p align="right">Articles:</p> <p>Description: Description: Task Force Cyber Awakening (TFCA) as directed by the CNO, provides cyber security investments to expand Operation Rolling Tide (ORT) approach to address near term and executable vulnerabilities across Platform IT (PIT) capabilities. These projects and capabilities include the studies and analysis to support PIT improvements to ensure systems are optimally configured to enhance Navy's ability to maneuver in this expanding environment.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: * New project kickoff * Initial studies and Analysis for vulnerability assessment * Complete initial plans for PIT improvements and system configurations</p> <p>FY 2017 Base Plans: * N/A - Project moved in FY17 to OMN LI 4C1P (Issue #16019)</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	3.000	0.000	0.000	0.000
	-	-	-	-	-

<p>Title: Mocking Jay</p> <p align="right">Articles:</p> <p>Description: (DETAILS HELD AT A HIGHER CLASSIFICATION) Chief of Naval</p>	0.750	7.800	24.377	0.000	24.377
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Operations (CNO)-directed project to develop Cyber capabilities in the maritime domain. Project includes innovative intelligence activities to develop analytical and engineering assessments, an industrial Laboratory facility to provide training and certification of the Navy's contribution to the USCYBERCOM Cyber Mission Force, and development of new Cyber capabilities and accesses to meet COCOM/USCYBERCOM/FLTCYBERCOM requirements. Enables development of new operating systems to ensure access and Cyber weapons delivery.</p> <p>FY 2015 Accomplishments: * Risk Reduction Efforts ahead of FY2016 project kickoff</p> <p>FY 2016 Plans: * New project kickoff * Develop intelligence analysis to determine specific technical vulnerabilities for Computer Network Operations (Specific development details held at a higher classification level). * Funds development and testing of computer networks for modeling, simulation, and tailoring of Cyber capabilities.</p> <p>FY 2017 Base Plans: *CNO directed top-down program in support specific cyber related R&D projects * Develop intelligence analysis to determine specific technical vulnerabilities for Computer Network Operations * Funds the development and testing of computer networks for modeling, simulation, and tailoring of Cyber capabilities * Funds the lease and build out of an industrial Laboratory space able to accommodate 180 personnel (intelligence analysts, engineers, and Cyber developers) and specialized information technology and exploitation equipment in order to create a premier Navy Cyberspace development capability (fitting electronic equipment racks, equipment, equipment components, computers, desks, workstations) * Funds build out of a Cyber Infrastructure to support research and development of a Navy option for Unified Platform.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
* Funds continued development and testing of computer networks for modeling, simulation, and tailoring of Cyber capabilities. Networks will be expanded to support growing Navy Cyber Mission Force requirements. * Continue detailed innovative intelligence analysis to determine specific technical vulnerabilities for Computer Network Operations. (DETAILS HELD AT A HIGHER CLASSIFICATION) FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	15.993	46.403	99.998	0.000	99.998

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTEN/0604270N/1742: <i>Electronic Warfare Technical Development</i>	1.652	1.642	1.665	-	1.665	1.596	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

These programs are designated non-ACAT and operate under streamlined acquisition. This designation supports a streamlined acquisition process using the Advanced Concept Technology Demonstration documentation of the Defense Acquisition Guidance.

E. Performance Metrics

Measures include quality and impact of new ideas and approaches, the success of the technology application in satisfying Combatant Commanders and Fleet requirements, and successful cost effective transition of the capability into operational systems. The goal of these investments is to provide to Commanders non-kinetic options to influence adversaries and prevent escalation of crises. Due to the nature and classification of these efforts, qualitative measures are used. It is the intent through the development of modeling and simulation scenarios and capabilities to develop quantitative metrics. The success of this depends heavily on the insight obtained via various intelligence community efforts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	Various	Classified-1 : Classified	0.000	2.200	Oct 2014	13.914	Nov 2015	22.346	Oct 2016	-		22.346	Continuing	Continuing	Continuing
System Engineering	SS/CPFF	Applied Research Laboratory : University Park, PA	0.000	3.589	Oct 2014	6.296	Dec 2015	8.932	Dec 2016	-		8.932	0.000	18.817	-
Systems Engineering	WR	NRL : Washington, DC	0.000	3.084	Oct 2014	9.300	Oct 2015	10.360	Oct 2016	-		10.360	0.000	22.744	-
Ancillary Hardware Development	Various	Classified : Classified	0.000	0.000		0.000		5.000	Nov 2016	-		5.000	0.000	5.000	-
Training Development (Classified)	Reqn	Classified : Classified	0.000	0.500	Oct 2014	0.810	Oct 2015	0.910	Oct 2016	-		0.910	0.000	2.220	-
Training Development (CDL)	Reqn	NAVICP : Philadelphia, PA	0.000	0.061	Oct 2014	0.098	Oct 2015	0.099	Oct 2016	-		0.099	0.000	0.258	-
Subtotal			0.000	9.434		30.418		47.647		-		47.647	-	-	-

Remarks
Training Development: Contract Method is Government Purchase Card (GPC).

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	SS/CPFF	ARGON-1 : Fairfax, VA	0.000	0.234	Oct 2014	0.370	Dec 2015	0.570	Dec 2016	-		0.570	0.000	1.174	-
Software Development	SS/CPFF	L3 Communications : New York, NY	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Development Support	WR	SSC PAC : San Diego, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Software Development	SS/CPFF	ARGON-2 : Fairfax, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Development Support	WR	NRL-1 : Washington, DC	0.000	1.169	Oct 2014	3.520	Oct 2015	4.520	Oct 2016	-		4.520	0.000	9.209	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	Various	Classified-1 : Classified	0.000	1.050	Oct 2014	2.920	Oct 2015	32.290	Oct 2016	-		32.290	0.000	36.260	-
Studies & Analysis	WR	NRL-2 : Washington, DC	1.654	0.000		0.000		0.000		-		0.000	0.000	1.654	-
Software Development	SS/CPFF	ARL : University Park, PA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Software Development	Various	Classified-2 : Classified	0.000	0.000		3.100	Jan 2016	4.100	Jan 2017	-		4.100	0.000	7.200	-
Development Support	Various	Classified : Classified	0.000	0.750	Jan 2016	0.000		0.000		-		0.000	0.000	0.750	-
Integrated Logistics Support (ILS)	Reqn	NAVICP : Philadelphia, PA	0.000	0.046	Oct 2014	0.074	Oct 2015	0.075	Dec 2016	-		0.075	0.000	0.195	-
Technical Data (Software Programs & Ref Materials)	Reqn	NPWC : Chesapeake, VA	0.000	0.025	Nov 2014	0.040	Nov 2015	0.040	Nov 2016	-		0.040	0.000	0.105	-
Studies & Analysis	MIPR	Classified : Classified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Comm'l Drivers Licenses (CDL)	Reqn	Classified : Classified	0.000	0.009	Oct 2014	0.041	Jan 2016	0.000	Jan 2017	-		0.000	0.000	0.050	-
Subtotal			1.654	3.283		10.065		41.595		-		41.595	0.000	56.597	-

Remarks

CDL, ILS & Tech Data: Contract Method is Government Purchase Card (GPC).
 CDLs are required for Command Personnel to drive Command Vehicles supporting the installation of mission hardware.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWC : China Lake, CA	0.000	0.226	Dec 2014	0.360	Dec 2015	2.870	Dec 2016	-		2.870	0.000	3.456	-
Subtotal			0.000	0.226		0.360		2.870		-		2.870	0.000	3.456	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Information Warfare System																												
Acquisition Milestones: Milestone B																												
Acquisition Milestones: IOC - Initial Operational Capability																												
Acquisition Milestones: FOC - Full Operational Capability																												
Systems Engineering: CDD/RFP APPROVAL (Capability Development Document / Request for Proposal)																												
Systems Engineering: SRR - SRR - System Requiements Review																												
Systems Engineering: PDR - Preliminary Design Review																												
Systems Engineering: CDR - Critical Design Review																												
Systems Engineering: ATO - Authorization to Operate																												
Development Work: Waveforms: 1-Waveforms																												
Development Work: Waveforms: 2-Waveforms																												
Development Work: Waveforms: 3 - Waveforms - Target Research & Technical Development (TRTD)																												
Development Work: Waveforms: 4-Waveforms - Classified																												
Development Work: Waveforms: 5 - Waveforms - Classified																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development Work: Waveforms: 6 - Waveforms - Classified																												
Development Work: Waveforms: 7 - Waveforms - Classified																												
Development Work: Unique Access (UA): 1 - Unique Access - Cyber Network Operations (CNO) - Proof of Concept (POC)		■																										
Development Work: Unique Access (UA): 2 - Unique Access - Classified						■																						
Development Work: Unique Access (UA): 3 - Unique Access - Classified										■																		
Development Work: Unique Access (UA): 4 - Unique Access - Classified														■														
Development Work: Unique Access (UA): 5 - Unique Access																												
Development Work: Unique Access (UA): 6 - Unique Access																												
Development Work: Unique Access (UA): 7 - Unique Access																												
Development Work: Unique Access (UA): Intelligence Analsys & Determination of Vulnerabilities																												
Development Work: Unique Access (UA): Infrastructure Develop-MD-1																												
Development Work: Unique Access (UA): Lab Develop-MC-2																												
Development Work: Unique Access (UA): Systems Spec Refinement - TW																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development Work: Unique Access (UA): Systems Engineering - TW																												
Development Work: Unique Access (UA): Supposrt Systems Engineering - TW																												
Development Work: Unique Access (UA): Primary Compound Acquisition and Installation - TW																												
Development Work: Unique Access (UA): Secondary Compound Acquisition and Installation - TW																												
Development Work: Unique Access (UA): Subsystem Enhancement & Integration - TW																												
Development Work: Unique Access (UA): Subsystem Enhancement & Intregation - TW																												
TESTING: Prototypes: 1-Prototypes																												
TESTING: Prototypes: 2-Prototypes																												
TESTING: Prototypes: 3 - Prototypes - Factory Acceptance Testing (FAT), TRTD, CNO Unique Access																												
TESTING: Prototypes: 4 - Prototypes - Classified																												
TESTING: Prototypes: 5 - Prototypes - Classified																												
TESTING: Prototypes: 6 - Prototypes - Classified																												
TESTING: Prototypes: 7 - Prototypes - Classified																												
TESTING: Maritime Cryptological System (MCS-21) Integration: 1 - MCS-21 Integration																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Factory Acceptance Testing (FAT), Operational Testing																												
TESTING: Maritime Cryptological System (MCS-21) Integration: 2 - MCS-21 Integration - Classified							■																					
TESTING: Maritime Cryptological System (MCS-21) Integration: 3 - MCS-21 Integration - Classified											■																	
TESTING: Maritime Cryptological System (MCS-21) Integration: 4 - MCS-21 Integration - Classified														■														
TESTING: Maritime Cryptological System (MCS-21) Integration: 5 - MCS-21 Integration - Classified																												
TESTING: Maritime Cryptological System (MCS-21) Integration: 6 - MCS-21 Integration																												
DELIVERIES: Information Operations Capabilities (IOC): Information Operations Capabilities (IOC) Modeling & Simulation Lab				■																								
DELIVERIES: Information Operations Capabilities (IOC): 1 - MCS-21 IOC - Spiral Enhancements																												
DELIVERIES: Information Operations Capabilities (IOC): 2 - MCS-21 IOC - Classified																												
DELIVERIES: Information Operations Capabilities (IOC): 3 - MCS-21 IOC - Classified																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
DELIVERIES: Information Operations Capabilities (IOC): 4 - MCS-21 IOC - Classified																																
DELIVERIES: Information Operations Capabilities (IOC): 5 - MCS-21 IOC - Classified																																
DELIVERIES: Information Operations Capabilities (IOC): 1 - TW - Component Acceptance																																
DELIVERIES: Information Operations Capabilities (IOC): 2 - TW - Component Acceptance																																
DELIVERIES: Information Operations Capabilities (IOC): 3 - TW Component Acceptance																																
DELIVERIES: Information Operations Capabilities (IOC): 1 - TW - Integrated System Evaluation																																
DELIVERIES: Information Operations Capabilities (IOC): 2 - TW - Integrated System Evaluation																																
DELIVERIES: Information Operations Capabilities (IOC): MC - Testing CNO for Model Simulation - 1																																
DELIVERIES: Information Operations Capabilities (IOC): MC - Intelligence Analysis of Tech Vulnerables - 2																																
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 1-CNO Capabilities - Spiral Enhancements																																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 2-CNO Capabilities - Spiral Enhancements / Full Operational Capability (FOC)								■																				
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 3 -CNO Capabilities - Classified												■																
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 4 - CNO Capabilities - Classified																■												
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 5 - CNO Capabilities																				■								
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 6 - CNO Capabilities																												■
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 1																■												
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 2																				■								
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 3																												■
DELIVERIES: Maritime Cryptological System (MSC-21): 6 - CNO Capabilities																												■
DELIVERIES: Maritime Cryptological System (MSC-21): MCS-21 Product Line - Full Operational Capability (FOC)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Information Warfare System				
Acquisition Milestones: Milestone B	2	2017	2	2017
Acquisition Milestones: IOC - Initial Operational Capability	3	2019	3	2019
Acquisition Milestones: FOC - Full Operational Capability	4	2020	4	2020
Systems Engineering: CDD/RFP APPROVAL (Capability Development Document / Request for Proposal)	4	2016	4	2016
Systems Engineering: SRR - SRR - System Requiements Review	2	2017	2	2017
Systems Engineering: PDR - Preliminary Design Review	3	2017	3	2017
Systems Engineering: CDR - Critical Design Review	1	2018	1	2018
Systems Engineering: ATO - Authorization to Operate	3	2019	3	2019
Development Work: Waveforms: 1-Waveforms	4	2015	4	2015
Development Work: Waveforms: 2-Waveforms	4	2016	4	2016
Development Work: Waveforms: 3 - Waveforms - Target Research & Technical Development (TRTD)	4	2017	4	2017
Development Work: Waveforms: 4- Waveforms - Classified	4	2017	4	2017
Development Work: Waveforms: 5 - Waveforms - Classified	4	2018	4	2018
Development Work: Waveforms: 6 - Waveforms - Classified	4	2019	4	2019
Development Work: Waveforms: 7 - Waveforms - Classified	4	2020	4	2020
Development Work: Unique Access (UA): 1 - Unique Access - Cyber Network Operations (CNO) - Proof of Concept (POC)	2	2015	2	2015
Development Work: Unique Access (UA): 2 - Unique Access - Classified	2	2016	2	2016
Development Work: Unique Access (UA): 3 - Unique Access - Classified	2	2017	2	2017
Development Work: Unique Access (UA): 4 - Unique Access - Classified	2	2018	2	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Development Work: Unique Access (UA): 5 - Unique Access	2	2019	3	2019
Development Work: Unique Access (UA): 6 - Unique Access	2	2020	3	2020
Development Work: Unique Access (UA): 7 - Unique Access	2	2021	3	2021
Development Work: Unique Access (UA): Intelligence Analysys & Determination of Vulnerabilities	1	2016	4	2016
Development Work: Unique Access (UA): Infrastructure Develop-MD-1	4	2015	4	2016
Development Work: Unique Access (UA): Lab Develop-MC-2	1	2016	3	2016
Development Work: Unique Access (UA): Systems Spec Refinement - TW	1	2016	4	2016
Development Work: Unique Access (UA): Systems Engineering - TW	3	2016	3	2017
Development Work: Unique Access (UA): Supposrt Systems Engineering - TW	1	2017	3	2017
Development Work: Unique Access (UA): Primary Compound Acquisition and Installation - TW	4	2017	4	2018
Development Work: Unique Access (UA): Secondary Compound Acquisition and Installation - TW	2	2018	2	2019
Development Work: Unique Access (UA): Subsystem Enhancement & Integration - TW	4	2017	2	2018
Development Work: Unique Access (UA): Subsystem Enhancement & Intregation - TW	4	2019	3	2020
TESTING: Prototypes: 1-Prototypes	4	2015	4	2015
TESTING: Prototypes: 2-Prototypes	4	2016	4	2016
TESTING: Prototypes: 3 - Prototypes - Factory Acceptance Testing (FAT), TRTD, CNO Unique Access	4	2017	4	2017
TESTING: Prototypes: 4 - Prototypes - Classified	4	2018	4	2018
TESTING: Prototypes: 5 - Prototypes - Classified	4	2019	4	2019
TESTING: Prototypes: 6 - Prototypes - Classified	4	2020	4	2020
TESTING: Prototypes: 7 - Prototypes - Classified	4	2021	4	2021
TESTING: Maritime Cryptological System (MCS-21) Integration: 1 - MCS-21 Integration Factory Acceptance Testing (FAT), Operational Testing	2	2015	3	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TESTING: Maritime Cryptological System (MCS-21) Integration: 2 - MCS-21 Integration - Classified	2	2016	3	2016
TESTING: Maritime Cryptological System (MCS-21) Integration: 3 - MCS-21 Integration - Classified	2	2017	3	2017
TESTING: Maritime Cryptological System (MCS-21) Integration: 4 - MCS-21 Integration - Classified	2	2018	3	2018
TESTING: Maritime Cryptological System (MCS-21) Integration: 5 - MCS-21 Integration - Classified	2	2019	3	2019
TESTING: Maritime Cryptological System (MCS-21) Integration: 6 - MCS-21 Integration	2	2020	3	2020
DELIVERIES: Information Operations Capabilities (IOC): Information Operations Capabilities (IOC) Modeling & Simulation Lab	4	2015	4	2015
DELIVERIES: Information Operations Capabilities (IOC): 1 - MCS-21 IOC - Spiral Enhancements	4	2016	4	2016
DELIVERIES: Information Operations Capabilities (IOC): 2 - MCS-21 IOC - Classified	4	2017	4	2017
DELIVERIES: Information Operations Capabilities (IOC): 3 - MCS-21 IOC - Classified	4	2018	4	2018
DELIVERIES: Information Operations Capabilities (IOC): 4 - MCS-21 IOC - Classified	4	2019	4	2019
DELIVERIES: Information Operations Capabilities (IOC): 5 - MCS-21 IOC - Classified	4	2020	4	2020
DELIVERIES: Information Operations Capabilities (IOC): 1 - TW - Component Acceptance	2	2017	3	2017
DELIVERIES: Information Operations Capabilities (IOC): 2 - TW - Component Acceptance	3	2018	4	2018
DELIVERIES: Information Operations Capabilities (IOC): 3 - TW Component Acceptance	4	2019	1	2020
DELIVERIES: Information Operations Capabilities (IOC): 1 - TW - Integrated System Evaluation	2	2019	3	2019
DELIVERIES: Information Operations Capabilities (IOC): 2 - TW - Integrated System Evaluation	3	2020	2	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204575N / <i>Elect Warfare Readiness Supt</i>	Project (Number/Name) 2263 / <i>Information Warfare System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DELIVERIES: Information Operations Capabilities (IOC): MC - Testing CNO for Model Simulation - 1	4	2016	1	2018
DELIVERIES: Information Operations Capabilities (IOC): MC - Intelligence Analysis of Tech Vulnerables - 2	2	2015	1	2019
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 1-CNO Capabilities - Spiral Enhancements	4	2015	4	2015
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 2-CNO Capabilities - Spiral Enhancements / Full Operational Capability (FOC)	4	2016	4	2016
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 3 -CNO Capabilities - Classified	4	2017	4	2017
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 4 - CNO Capabilities - Classified	4	2018	4	2018
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 5 - CNO Capabilities	4	2019	4	2019
DELIVERIES: Cyber Network Operations (CNO) Capabilities: 6 - CNO Capabilities	4	2021	4	2021
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 1	1	2018	4	2019
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 2	4	2019	2	2020
DELIVERIES: Cyber Network Operations (CNO) Capabilities: TW - Function Classified - 3	4	2020	4	2020
DELIVERIES: Maritime Cryptological System (MSC-21): 6 - CNO Capabilities	4	2020	4	2020
DELIVERIES: Maritime Cryptological System (MSC-21): MCS-21 Product Line - Full Operational Capability (FOC)	1	2015	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	733.522	17.377	23.708	48.635	-	48.635	83.573	107.884	108.049	70.977	Continuing	Continuing
1780: <i>HARM Improvement</i>	47.651	1.343	1.383	1.347	-	1.347	1.355	1.363	1.354	1.380	Continuing	Continuing
2185: <i>AARGM</i>	685.871	16.034	12.904	4.237	-	4.237	4.786	4.782	4.887	4.977	Continuing	Continuing
2189: <i>AARGM ER</i>	0.000	0.000	9.421	43.051	-	43.051	77.432	101.739	101.808	64.620	Continuing	Continuing

Program MDAP/MAIS Code: 368

Note
Project Unit 2189 is established for the Anti-Radiation Guided Missile (AARGM) Extended Range (ER) developmental effort and is a new start in FY 2016.

A. Mission Description and Budget Item Justification
Research, Development, Test and Evaluation funding for the Joint Service Anti-Radiation Missile (ARM) program, which will include near and far term performance improvements, cost reduction, and studies that establish future development requirements. Specific initial efforts include lower cost seeker component development and seeker aided fuzing to enhance warhead performance in low angle impacts and against certain ship targets.

JUSTIFICATION FOR BUDGET ACTIVITY: These projects are funded under Operational Systems Development because they include development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	17.420	52.708	83.991	-	83.991
Current President's Budget	17.377	23.708	48.635	-	48.635
Total Adjustments	-0.043	-29.000	-35.356	-	-35.356
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-29.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.043	0.000			
• Program Adjustments	0.000	0.000	-27.761	-	-27.761
• Rate/Misc Adjustments	0.000	0.000	-7.595	-	-7.595

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0205601N / *Harm Improvement*

Change Summary Explanation

Decrease in Harm Improvement by \$2.254M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Technical: FY 2017 - FY 2021 funding increases to support AARGM Extended Range (ER) Development reflected in Project Unit 2189.

Schedule: Project Unit 2189 AARGM ER was updated due to the refinement of Capability Development Document requirements and re-phasing of the program budget. These new requirements necessitate a refined schedule with the addition of a Technology Maturation and Risk Reduction approach.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>				Project (Number/Name) 1780 / <i>HARM Improvement</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1780: <i>HARM Improvement</i>	47.651	1.343	1.383	1.347	-	1.347	1.355	1.363	1.354	1.380	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

High-speed Anti-Radiation Missile (HARM) Improvement is a Navy led joint service program with the Air Force. The program commenced production in FY 1983. Program element 0205601N was used until FY 1990 to develop and test one hardware and two software upgrades to the HARM (Air-to-Ground (AGM)-88B, Block 3 and AGM-88C, Block 4) as Engineering Change Proposals (ECPs). Another ECP software program (Block 3A & 5) was developed (FY 1996 through FY 1999) to modify HARM software in order to meet operational requirements. HARM Block 3A/5 software was distributed to the Fleet in FY 2000. The Block 5 tactical software upgrade gives HARM improved geographic specificity and improved capability against advanced waveforms. HARM Block 5A was developed to improve RF track, navigation, targeting and seekers. Block 5A was deployed to the Fleet in FY 2015.

HARM Improvement includes efforts to conduct Foreign Material Assessment (FMA) analysis and engineering to exploit vulnerabilities of foreign weapon system threats. HARM Improvement includes funding for threat assessment, operational updates and integration efforts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: HARM Foreign Material Assessment (FMA)	1.343	1.383	1.347	0.000	1.347
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
The FMA team conducted FMA analysis and engineering to exploit vulnerabilities of foreign weapon system threats. Focused on new threat systems as they became available as well as theater/country-specific systems of interest, coordinated priorities through the Fleet Anti-Radiation Missile (ARM) Steering Committee. Expect continued testing and evaluation on advanced Surface-to-Air weapons and related Integrated Air Defense System (IADS), jammers and ARM countermeasures, and non-traditional ARM targets. Team has continued to support Fleet engagement as a key element of engineering and analytical efforts, which includes funding for threat assessment, operational updates and integration efforts.					
FY 2016 Plans:					
The FMA team will continue to conduct FMA analysis and engineering to exploit vulnerabilities of foreign weapon system threats. Focus will be on new threat systems as they become available as well as theater/country-specific systems of interest, with priorities coordinated through the Fleet ARM Steering Committee. Expect continued testing and evaluation on advanced Surface-to-Air weapons and related IADS, jammers and ARM countermeasures, and non-traditional ARM targets. Team will continue to support Fleet engagement as a key element of engineering and analytical efforts, which includes funding for threat assessment, operational updates					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 1780 / <i>HARM Improvement</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>and integration efforts. Additional test priorities include characterizing complex systems in the field, so that the 5A attenuation and Lower Threshold Adjust fields can be populated with the data that gives the best track quality to the High-speed Anti-Radiation Missile (HARM) missile. The Foreign Material Assessment (FMA) team will conduct developmental tests of in-country foreign threat systems via ground and flight test to maximize HARM system performance. Focus will be on any system not previously tested by the FMA team. Non-traditional targeting methods will be explored as well.</p> <p><i>FY 2017 Base Plans:</i> The FMA team will continue to conduct FMA analysis and engineering to exploit vulnerabilities of foreign weapon system threats. Focus will be on new threat systems as they become available as well as theater/ country-specific systems of interest, with priorities coordinated through the Fleet Anti-Radiation Missile Steering Committee. Expect continued testing on advanced Surface-to-Air weapons and related Integrated Air Defense System (IADS), jammers and ARM countermeasures, and non-traditional Anti-Radiation Missile (ARM) targets. Team will continue to support Fleet engagement as a key element of engineering and analytical efforts, which includes funding for threat assessment, operational updates and integration efforts. Additional test priorities include characterizing complex systems in the field, so that the 5A attenuation and Lower Threat Adjust fields can be populated with the data that gives the best track quality to the HARM missile. The FMA team will continue to conduct developmental test of in-country foreign threat systems via ground and flight test in FY 2017 to maximize HARM system performance. Non-traditional targeting methods will be explored as well.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	1.343	1.383	1.347	0.000	1.347

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

HARM system updates are provided through the System Support Activity (SSA) at Naval Air Warfare Center - Weapons Division (NAWCWD), China Lake, CA.

E. Performance Metrics

Continue FMA testing analysis against new and evolving foreign threats.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 1780 / <i>HARM Improvement</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWCWD : China Lake, CA	3.813	1.341	Nov 2014	1.181	Nov 2015	1.141	Nov 2016	-		1.141	Continuing	Continuing	Continuing
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	24.732	0.000		0.000		0.000		-		0.000	0.000	24.732	-
Subtotal			28.545	1.341		1.181		1.141		-		1.141	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test & Eval	WR	NAWCWD : China Lake, CA	18.701	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test & Eval	WR	NAWCWD : China Lake, CA	0.000	0.000		0.200	Nov 2015	0.204	Nov 2016	-		0.204	Continuing	Continuing	Continuing
Subtotal			18.701	0.000		0.200		0.204		-		0.204	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	WR	Various : Various	0.405	0.002	Jan 2015	0.002	Jan 2016	0.002	Jan 2017	-		0.002	Continuing	Continuing	Continuing
Subtotal			0.405	0.002		0.002		0.002		-		0.002	-	-	-

Remarks
Contract Type for Travel is Travel Order (TO).

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.651	1.343	1.383	1.347	-	1.347	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 1780 / <i>HARM Improvement</i>
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HARM IMPROVEMENT	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
Radar System Evaluation	Foreign Material Assessment																											
Systems Development																												
Production Milestones																												
Deliveries																												

2017PB - 0205601N - 1780

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 1780 / <i>HARM Improvement</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>HARM IMPROVEMENT</i>				
Acquisition Milestones: Radar System Evaluation: Radar System Evaluation - Foreign Material Assessment	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>				Project (Number/Name) 2185 / <i>AARGM</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2185: <i>AARGM</i>	685.871	16.034	12.904	4.237	-	4.237	4.786	4.782	4.887	4.977	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Advanced Anti-Radiation Guided Missile (AARGM) transitioned a Phase III Small Business Innovative Research (SBIR) program to develop and demonstrate a multi-mode guidance section on a HARM airframe to System Development and Demonstration (SD&D) in FY 2003. The AARGM SD&D program was designed to integrate multi-mode guidance (passive Anti-Radiation Homing (ARH)/active Millimeter Wave (MMW) Radar/Global Positioning System (GPS)/Inertial Navigation System) on the HARM Air-to-Ground Missile (AGM)-88. AARGM weapon system capabilities include: active MMW terminal guidance, counter shutdown, expanded threat coverage, enhanced ARH, netted targeting real-time feed via Integrated Broadcast System (IBS) prior to missile launch, Weapon Impact Assessment (WIA) transmitted prior to detonation, GPS/point-to-point weapon navigation, and weapon employment with impact avoidance zone/missile impact zones.

In June 2003, a successful Milestone B transitioned AARGM to a SD&D Acquisition Category 1C program. Alliant Techsystems (ATK) Missile Systems Company was awarded the AARGM SD&D contract valued at \$222.6M. In May 2004, the contract baseline was increased to \$231.9M to accelerate incorporation of an embedded IBS-Receiver, enabling the warfighter to directly receive National intelligence data, increasing overall pilot situational awareness. Recent modifications have changed the current baseline to \$232.3M.

The AARGM program includes 40 SD&D test articles with the follow on of 2,435 production modification kits. Milestone C was achieved 4Q FY 2008, followed by a combined FY 2008/FY 2009 Low Rate Initial Production (LRIP) contract award in 1Q FY 2009. Developmental testing was completed in 2009. Initial Operational Test and Evaluation (IOT&E) was completed in 3Q FY 2012. Full-Rate Production (FRP) decision was received 4 September 2012 with FRP contract award on 10 September 2012, and deliveries began in January 2014. The program awarded FRP-4 on 4 September 2015 with deliveries projected to begin in January 2017.

The AARGM Block 1 Upgrade program began in FY 2012 and consists of a software only upgrade to deferred Key Performance Parameter 3 and to correct IOT&E deficiencies in the AGM-88E All-Up-Round as well as the Common Munitions Built-in Test (BIT) Reprogramming Equipment (CMBRE). In parallel with the Block 1 Upgrade, Integrated Broadcast Service (IBS)-R developmental efforts are ongoing.

Follow-on Operational Test and Evaluation/Integrated Test/Operational Test - Development (FOT&E/IT/OT-D) in conjunction with Block 1 Upgrade will complete tactics development and support promulgation of Operational Tactics Guide (OTG).

In FY 2015 - FY 2021, the Air-to-Ground Missile (AGM)-88E AARGM program plans to develop and demonstrate the capability to engage and destroy non-traditional and Overseas Contingency Operations targets. These developments continue Future Naval Capability Science and Technology investments by the Office of Naval Research initiated in FY 2006.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / <i>AARGM</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Threat Data Library / System Updates</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: AGM-88E Block 1 Upgrade continued effort to update Electronic Intelligence files and Millimeter Wave signatures to identify track and engage new and/or improved threat radars. Continued test and assessment of threat systems. Developed threat data for new target sets.</p> <p>FY 2016 Plans: AGM-88E Block 1 Upgrade continues effort to update Electronic Intelligence files and Millimeter Wave signatures to identify track and engage new and/or improved threat radars. Continue test and assessment of threat systems. Develop threat data for new target sets.</p> <p>FY 2017 Base Plans: AGM-88E Block 1 Upgrade continues effort to upgrade systems such as the Electronic Intelligence files and Millimeter Wave signatures to identify track and engage new and/or improved threat radars. Continue test and assessment of threat systems that impact already fielded weapons and to develop threat data for new target sets.</p> <p>FY 2017 OCO Plans: N/A</p>	0.400	0.400	2.210	0.000	2.210
<p>Title: Follow-on Operational Test and Evaluation (FOT&E)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued FOT&E, including Integrated Test (IT) and Operational Test (OT) for Advanced Anti-Radiation Guided Missile (AARGM) Block 1 utilizing Commander Operational Test & Evaluation Force (COMOPTEVFOR) requirements for suitable and effective for desired flights, targets and locations.</p> <p>FY 2016 Plans: Continue FOT&E, including Integrated Test and dedicated OT for AARGM Block 1 utilizing COMOPTEVFOR requirements to assess weapon suitability and effectiveness against targets and locations.</p> <p>FY 2017 Base Plans:</p>	12.828	10.814	1.077	0.000	1.077

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / AARGM
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete FOT&E, including IT and OT for AARGM Block 1 utilizing COMOPTEVFOR requirements for suitable and effective for desired flights, targets and locations. Continue to upgrade the system with test results to include developmental activity assessing software and hardware anomalies. FY 2017 OCO Plans: N/A					
Title: Advanced Development Articles:	2.806	1.690	0.950	0.000	0.950
FY 2015 Accomplishments: Continued support for advanced development, analysis activities of testing, configuration control board review, test plan reviews, requirements analysis and weapons integration analysis. FY 2016 Plans: Continue support for advanced development, systems capability upgrades, analysis activities and testing such as the Integrated Broadcast Service - Receiver. Funding supports testing, configuration control board review, test plan reviews, requirements analysis and weapons integration analysis. Funding also supports the Anti-Radiation Missile (AARGM) Derivative Program to include upgrading the AGM-88E capability against non-traditional and Overseas Contingency Operations (OCO) targets, weapon system developmental activities, range and laboratory support and analysis. FY 2017 Base Plans: Continue support for advanced development, upgrades systems capability, analysis activities and testing such as the Integrated Broadcast Service - Receiver. Funding supports testing, configuration control board review, test plan reviews, requirements analysis and weapons integration analysis. Funding also supports upgrading AGM-88E capability against non-traditional and OCO targets. This includes weapon system developmental activities, range and laboratory support and analysis. FY 2017 OCO Plans: N/A	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	16.034	12.904	4.237	0.000	4.237

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• WPN 2327: <i>HARM Mods</i>	106.489	120.798	178.213	-	178.213	222.625	222.159	156.534	159.605	343.662	1,935.289

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / <i>AARGM</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

FY 2021 and Total Cost funding listed does not include the AARGM ER funding.

D. Acquisition Strategy

The AARGM program started as a Phase I Small Business Innovative Research (SBIR), Advanced Technology Program, evolved into a Phase III SBIR program, and transitioned into a System Development and Demonstration (SD&D) Acquisition Category 1C program in June 2003. The AARGM SD&D fulfills U.S. Navy operational requirements and incorporates AARGM Advanced Technology Development and Quick Bolt Advanced Concept Technology Demonstration - demonstrated system requirements. Government responsibilities for SD&D have included monitoring, technical assessment, and validation of contractor technology development and testing. Milestone C was achieved 4Q FY 2008, followed by a combined FY08/FY09 Low Rate Initial Production (LRIP) contract award in 1Q FY 2009. LRIP I deliveries commenced 3Q FY 2010. Full-Rate Production (FRP) decision was received 20 August 2012 with FRP contract award on 10 September 2012 and deliveries began in January 2014. Block 1 Fleet Release anticipated for 2Q FY 2017.

E. Performance Metrics

Achieved Milestone C in 2008. Completed Developmental Testing in 2009. Successfully completed Operational Test Readiness Review in 2010. Successfully completed Operational Test in 3Q FY 2012. Full-Rate Production approval was granted in 4Q FY 2012, and deliveries commenced in FY 2014. Block 1 Fleet Release scheduled for 2Q FY 2017.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / <i>AARGM</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWCWD : China Lake, CA	70.377	3.740	Nov 2014	3.448	Nov 2015	2.012	Nov 2016	-		2.012	Continuing	Continuing	Continuing
Software Development	WR	SPAWAR : San Diego, CA	0.471	0.098	Mar 2015	0.050	Mar 2016	0.050	Mar 2017	-		0.050	Continuing	Continuing	Continuing
Mission Planning	WR	Various : Various	0.100	0.100	Mar 2015	0.100	Mar 2016	0.100	Mar 2017	-		0.100	Continuing	Continuing	Continuing
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	543.386	0.000		0.000		0.000		-		0.000	0.000	543.386	-
Subtotal			614.334	3.938		3.598		2.162		-		2.162	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year Support no longer funded in the FYDP	Various	Various : Various	7.147	0.000		0.000		0.000		-		0.000	0.000	7.147	-
Subtotal			7.147	0.000		0.000		0.000		-		0.000	0.000	7.147	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Test & Evaluation	WR	NAWCWD : China Lake, CA	26.050	0.220	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Test & Evaluation	SS/IDIQ	Orbital ATK : Northridge, CA	1.305	4.571	Feb 2015	0.300	Feb 2016	0.000		-		0.000	0.000	6.176	6.176
Operational and Integrated Test & Evaluation (IT&OT)	WR	NAWCWD : China Lake, CA	1.795	5.009	Nov 2014	0.992	Nov 2015	0.401	Nov 2016	-		0.401	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT)	WR	COMOPTEVFOR : Norfolk, VA	10.652	1.135	Nov 2014	6.537	Nov 2015	0.648	Nov 2016	-		0.648	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT)	SS/IDIQ	Orbital ATK : Northridge, CA	0.000	0.000		0.300	Feb 2016	0.291	Feb 2017	-		0.291	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement	Project (Number/Name) 2185 / AARGM
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year T&E no longer funded in the FYDP	Various	Various : Various	7.469	0.000		0.000		0.000		-		0.000	0.000	7.469	-
Subtotal			47.271	10.935		8.129		1.340		-		1.340	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	Various	Various : Various	4.151	0.279	Feb 2015	0.284	Feb 2016	0.189	Feb 2017	-		0.189	Continuing	Continuing	Continuing
Travel	WR	NAVAIR HQ : Patuxent River, MD	1.697	0.017	Jan 2015	0.015	Feb 2016	0.015	Feb 2017	-		0.015	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWC AD : Patuxent River, MD	1.021	0.665	Nov 2014	0.678	Nov 2015	0.431	Nov 2016	-		0.431	Continuing	Continuing	Continuing
Program Management Support	Various	NRO : Washington, D.C.	0.000	0.200	Nov 2014	0.200	Nov 2015	0.100	Nov 2016	-		0.100	Continuing	Continuing	Continuing
Prior year Mgmt no longer funded in the FYDP	Various	Various : Various	10.250	0.000		0.000		0.000		-		0.000	0.000	10.250	-
Subtotal			17.119	1.161		1.177		0.735		-		0.735	-	-	-

Remarks

Contract Type for Travel is TO

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	685.871	16.034	12.904	4.237	-	4.237	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / AARGM
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AARGM	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acquisition Milestones																																
Milestones																																
Test & Evaluation																																
Operational Evaluation																																
Follow-on Test and Evaluation	Blk 1 IT/OT (FOT&E)																															
Production Milestones																																
Contract Award																																
Low Rate Initial Production Deliveries																																
Full-Rate Production Deliveries																																
	FRP Lot 1 - 72 (WPN)																															
					FRP Lot 2 - 97 (WPN)																											
									FRP Lot 3 - 110 (WPN)				FRP Lot 4 - 126 (WPN)				FRP Lot 5 - 155 (WPN)				FRP Lot 6 - 252 (WPN)				FRP Lot 7 - 336 (WPN)				FRP Lot 8 - 321 (WPN)			

2017PB - 0205601N - 2185

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / <i>AARGM</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AARGM				
Acquisition Milestones: Milestones: BLOCK 1 Fleet Release	2	2017	2	2017
Test & Evaluation: Follow-on Test and Evaluation: Block 1 IT/OT (FOT&E)	1	2015	2	2017
Production Milestones: Contract Award: Full-Rate Production Lot 4	4	2015	4	2015
Production Milestones: Contract Award: Full-Rate Production Lot 5	3	2016	3	2016
Production Milestones: Contract Award: Full-Rate Production Lot 6	3	2017	3	2017
Production Milestones: Contract Award: Full-Rate Production Lot 7	3	2018	3	2018
Production Milestones: Contract Award: Full-Rate Production Lot 8	3	2019	3	2019
Production Milestones: Contract Award: Full-Rate Production Lot 9	3	2020	3	2020
Production Milestones: Contract Award: Full-Rate Production Lot 10	3	2021	3	2021
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 1 (WPN)	1	2015	3	2015
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 2 (WPN)	3	2015	2	2016
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 3 (WPN)	2	2016	1	2017
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 4 (WPN)	2	2017	1	2018
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 5 (WPN)	2	2018	1	2019
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 6 (WPN)	2	2019	1	2020
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 7 (WPN)	2	2020	1	2021
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 8 (WPN)	2	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>				Project (Number/Name) 2189 / <i>AARGM ER</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2189: <i>AARGM ER</i>	0.000	0.000	9.421	43.051	-	43.051	77.432	101.739	101.808	64.620	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Air-to-Ground (AGM)-88E Extended Range (ER) Upgrade is a new start for FY 2016 to develop hardware and software modifications to improve the Advanced Anti-Radiation Guided Missile (AARGM)'s operational capabilities, including extended range, survivability and effectiveness against complex, new, and emerging threats. This budget line item funds a new rocket motor design, preliminary design review, test asset procurement, testing, and associated software updates for the AARGM-ER to ensure these capabilities perform in accordance with established requirements. Maturation of the AARGM-ER Acquisition Strategy entails a FY 2017 Technology Maturation and Risk Reduction (TMRR) phase and procurement of test articles beginning FY 2019. AARGM-ER retains the same guidance, sensor, and warhead capabilities of the Block 1 AARGM.

The AARGM-ER program is part of the Navy's Integrated Fire Control (IFC) approach to address advanced threat capabilities in the Anti-Access/Area-Denial (A2AD) environment. IFC solutions enable individual system capabilities to be leveraged across an effects chain, placing the full spectrum of tactical capability in the hands of the warfighter. IFC solutions that push engagement distances beyond the launch platform's radar horizon and allows the U.S. Navy to operate in, and control, contested battle space in littoral waters and A2/AD environments are increasingly critical as more scenarios require compressed and coordinated fire control timelines.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: AARGM ER Development	0.000	9.421	43.051	0.000	43.051
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Begin the developmental effort for the AARGM-ER upgrade to include awarding an AARGM Front End Design Analysis contract, development of technical requirements specifications, the Technology Maturation and Risk Reduction Request for Proposals, and documentation to satisfy mandatory DoD 5000.2 entry criteria. Execute analyses for F/A-18 and F-35C aircraft integration. Initiate range safety analysis for telemetry section Flight Termination System development. Develop data analyses to support lead system integration trade decisions.					
FY 2017 Base Plans: Continue the AARGM-ER developmental efforts to include execution of Milestone A and competitive contract award of two prototype contracts for AARGM-ER propulsion kits. Request For Proposal (RFP) for the Front End Modification and System Integration contract is scheduled for release 1Q FY2017. Continue analyses for F/A-18					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2189 / <i>AARGM ER</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
and F-35C aircraft integration. Continue range safety analysis for telemetry section Flight Termination System development. Continue Front End Design Analysis. Develop data analyses to support lead system integration trade decisions. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	9.421	43.051	0.000	43.051

C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• WPN 2327: <i>HARM Mods</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	30.000	169.784	199.784

Remarks
FY 2021 and Total Cost funding listed does not include the AARGM Block 1 funding.

D. Acquisition Strategy
The AARGM Extended Range Program will provide hardware and software modifications to improve AARGM's operational capabilities, including extended range, survivability, and effectiveness against complex, new, emerging threats. The program's objective for Initial Operational Capability is FY 2023.

E. Performance Metrics
AARGM-ER will enter development in FY 2016.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2189 / <i>AARGM ER</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware ER Propulsion Kit Prototype 1	TBD	TBD : TBD	0.000	0.000		0.000		13.126	May 2017	-		13.126	3.374	16.500	-
Primary Hardware ER Propulsion Kit Prototype 2	TBD	TBD : TBD	0.000	0.000		0.000		13.126	May 2017	-		13.126	78.374	91.500	-
Aircraft Integration	Various	Various : Various	0.000	0.000		0.750	Mar 2016	0.204	Dec 2016	-		0.204	31.157	32.111	-
Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	0.000		2.573	Feb 2016	3.323	Nov 2016	-		3.323	23.804	29.700	-
Telemetry Section	WR	NAWCWD : China Lake, CA	0.000	0.000		0.100	Feb 2016	0.204	Dec 2016	-		0.204	3.973	4.277	-
Front End Design Analysis	SS/CPFF	Orbital ATK : Northridge, CA	0.000	0.000		3.821	Sep 2016	4.179	Feb 2017	-		4.179	2.125	10.125	-
Front End Integration & Test	TBD	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	118.196	118.196	-
Subtotal			0.000	0.000		7.244		34.162		-		34.162	261.003	302.409	-

Remarks
AARGM-ER is a new start program for FY 2016. FY17 activities include ER Propulsion Kit source selection, execution of two ER Propulsion kit prototype contracts, release of the Request For Proposal (RFP) for the Front End Integration and Test contract, completion of the F-35 and F-18 integration and compatibility analysis, and Technology Maturation Risk Reduction (TMRR) acquisition and documentation activities to support the FY18 (MS) B Milestone.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Studies & Analysis	Various	Various : Various	0.000	0.000		0.105	Apr 2016	3.197	Dec 2016	-		3.197	1.563	4.865	-
Subtotal			0.000	0.000		0.105		3.197		-		3.197	1.563	4.865	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	27.672	27.672	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2189 / <i>AARGM ER</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
AARGM Block ER																												
Acquisition Milestones																												
Milestones																												
MS A ▲																												
MS B ▲																												
Requirements Development																												
Capability Development Document																												
CDD ▲																												
Requirements and Aircraft Integration Analyses																												
Systems Development																												
Front End Design Analysis																												
Propulsion Kit Development																												
Propulsion Kit Development Reviews																												
Front End Modification & System Integration																												
Front End Modification & System Integration Reviews																												
Test & Evaluation																												
Technical Evaluation																												
Operational Evaluation																												
DT&E																												
EOA ▼																												
Research & Development Milestones																												
Contract Awards																												
Front End Design Analysis ●																												
Propulsion Kit Prototype 1 & 2 ●																												
Front End & System Integration ●																												
DT Test Articles RDTEN Qty 6 ●																												
DT Test Articles RDTEN Qty 9 ●																												
Production Milestones																												
Contract Awards																												
Lot 1 WPN Qty 16 ●																												
Deliveries																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2189 / <i>AARGM ER</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AARGM Block ER				
Acquisition Milestones: Milestones: MS A	1	2017	1	2017
Acquisition Milestones: Milestones: MS B	3	2018	3	2018
Requirements Development: Capability Development Document: Capability Development Document	2	2016	2	2016
Requirements Development: Requirements and Aircraft Integration Analyses: Requirements and Aircraft Integration Analyses	2	2016	1	2017
Systems Development: Front End Design Analysis: Front End Design Analysis	4	2016	2	2018
Systems Development: Propulsion Kit Development: Propulsion Kit Development	3	2017	4	2019
Systems Development: Propulsion Kit Development Reviews: Propulsion Kit Preliminary Design Review	2	2018	2	2018
Systems Development: Propulsion Kit Development Reviews: Propulsion Kit Critical Design Review	4	2019	4	2019
Systems Development: Front End Modification & System Integration: Front End Modification & System Integration	2	2018	1	2021
Systems Development: Front End Modification & System Integration Reviews: System Preliminary Design Review	3	2019	3	2019
Systems Development: Front End Modification & System Integration Reviews: System Critical Design Review	1	2021	1	2021
Test & Evaluation: Technical Evaluation: Developmental Test & Evaluation	1	2021	4	2021
Test & Evaluation: Operational Evaluation: Early Operational Assessment	4	2021	4	2021
Research & Development Milestones: Contract Awards: Front End Design Analysis	4	2016	4	2016
Research & Development Milestones: Contract Awards: Propulsion Kit Prototype 1 & 2	3	2017	3	2017
Research & Development Milestones: Contract Awards: Front End & System Integration	2	2018	2	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2189 / <i>AARGM ER</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Research & Development Milestones: Contract Awards: DT Test Articles RDTEN Qty 6	4	2019	4	2019
Research & Development Milestones: Contract Awards: DT Test Articles RDTEN Qty 9	2	2020	2	2020
Production Milestones: Contract Awards: Lot 1 WPN Qty 16	4	2021	4	2021
Deliveries: DT Test Articles Qty 6	3	2020	4	2020
Deliveries: DT Test Articles Qty 9	1	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	793.531	135.583	142.361	124.785	-	124.785	60.197	42.557	43.543	44.491	Continuing	Continuing
2126: <i>ATDLS Integration</i>	663.778	51.219	45.027	37.995	-	37.995	22.990	24.723	25.424	25.996	Continuing	Continuing
3020: <i>MIDS/JTRS</i>	112.827	70.117	70.241	57.406	-	57.406	21.088	17.834	18.119	18.495	Continuing	Continuing
3341: <i>Network Tactical Common Data Link</i>	16.926	14.247	27.093	29.384	-	29.384	16.119	0.000	0.000	0.000	0.000	103.769

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 554

A. Mission Description and Budget Item Justification

Tactical Data Link (TDL) systems includes the Advanced Tactical Data Link Systems (ATDLS) Integration Programs, specifically Link 16 Network, Command and Control Processor (C2P) and Link Monitoring and Management Tool (LMMT); and Network Tactical Common Data Link (NTCDL) Program which provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, air, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video (FMV)) across dissimilar Joint, Service, Coalition, and civil networks. The Program Element also develops and tests tactical data link capability to distribute other data types to new and existing platforms.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Operational Systems Development because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, airborne, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video) across dissimilar Joint, Service, Coalition, and civil networks. NTCDL provides warfighters with the capability to support multiple, simultaneous, networked operations with currently fielded Common Data Link (CDL)-equipped platforms (e.g. F/ A-18, P-3, and MH-60R), in addition to next generation manned and unmanned platforms (e.g., P-8, Triton, UCLASS, and Fire Scout). NTCDL is an incremental capability (surface, airborne, sub-surface, man-portable) providing a modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing horizon extension for line-of-sight sensor systems for use in time critical strike missions. NTCDL counters Anti-Access/Area Denial (A2/AD) through its relay capability, and supports Tasking Collection Processing Exploitation Dissemination (TCPED) through its ISR networking capability. Additionally, NTCDL supports Humanitarian Assistance/Disaster Relief (HA/DR) efforts through its ability to share ISR data across dissimilar Joint, Service, Coalition, and Civil organizations.

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially A2/AD. With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document (ICD) and the JALN-M Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	
<p>connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) waveform (Navy Multiband Terminal (NMT)) for intra-battle group DARE communications, a CDL waveform for the HCB cross-link capability, and will leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, Positioning, Navigation, and Timing (PNT) efforts related to the JALN-M Pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global Positioning System (GPS) connectivity. Because the Pod is being designed to operate in an A2/AD environment, the Pod HCB and XDR (i.e. NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data.</p> <p>Link 16 Network Program provides high power shipboard and shore integrated Link 16 capability through the fielding of Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ships (MOS) and MOS Modernization (MOS Mod) including transmit and receive antennas and High Power Amplifiers (HPA). JTIDS, MOS and MOS Mod utilizes the JTIDS, MIDS Low Volume Terminal (LVT), and MIDS Joint Tactical Radio System (JTRS) terminals respectively, integrates the HPA and interfaces to the shipboard antenna and Command and Control Processor (C2P). MIDS-LVT and MIDS JTRS terminals are developed by the MIDS Program Office. JTIDS terminal is no longer in production, but is undergoing product improvement to maintain interoperability and security with MIDS-LVT and MIDS JTRS. As part of the product improvement all shipboard link 16 terminals are required to have Dynamic Network Management (DNM), Crypto Modernization (CM) and Frequency Remapping (FR). MIDS Program Office is developing additional improvements to the MIDS-LVT and MIDS JTRS terminals. The MIDS-LVT will have Link 16 Enhanced Throughput (ET) and the MIDS JTRS will have the added capability of four net Concurrent Multi-Netting (CMN) with Current Contention Receive (CCR) and Tactical Targeting Networking Technology (TTNT).</p> <p>The Multifunctional Information Distribution System (MIDS) program consists of two (2) products, MIDS Low Volume Terminal (LVT) and MIDS Joint Tactical Radio System (JTRS). MIDS-LVT provides Link 16 capability to platforms that were unable to employ Joint Tactical Information Distribution System due to space and weight constraints. The MIDS-LVT effort is multinational (U.S., France, Germany, Italy, and Spain) with joint Service participation (Navy, Army, and Air Force). The Department of Defense (DoD) established the program to design, develop, and deliver low volume, lightweight tactical information system terminals for U.S. and Allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT provides interoperability with North Atlantic Treaty Organization (NATO) users, significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal design is smaller, lighter, highly reliable, interoperable with JTIDS Class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets.</p> <p>MIDS JTRS, designed as a Pre-Planned Product Improvement (P3I) and executed as an Engineering Change Proposal (ECP) to the production MIDS-LVT configuration, completed qualification in the first quarter of fiscal year 2010. It facilitated the JTRS incremental approach for fielding advanced JTRS transformational networking capability and transformed the MIDS-LVT into a 4-channel, Software Communications Architecture (SCA) compliant, Joint Tactical Radio. A form-fit-function replacement to MIDS-LVT, MIDS JTRS also adds three programmable 2 Megahertz (MHz) to 2 Gigahertz (GHz) channels capable of hosting the JTRS legacy and networking waveforms. In addition to the Link 16, Tactical Air Navigation, and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput, Link 16 Frequency Re-mapping, software programmability, Cryptographic Modernization, and Four Net Concurrent Multi-Netting with Concurrent Contention Receive(CMN-4). With CMN-4, MIDS JTRS also utilizes Tactical Targeting Network Technology for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise and the ability to simultaneously participate in four Link 16 Nets.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	121.680	149.997	127.611	-	127.611
Current President's Budget	135.583	142.361	124.785	-	124.785
Total Adjustments	13.903	-7.636	-2.826	-	-2.826
• Congressional General Reductions	-	-0.136			
• Congressional Directed Reductions	-	-7.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	16.998	0.000			
• SBIR/STTR Transfer	-3.096	0.000			
• Program Adjustments	0.000	0.000	4.500	-	4.500
• Rate/Misc Adjustments	0.001	0.000	-7.326	-	-7.326

Change Summary Explanation

ATDLS (2126):

Decrease in Advanced Tactical Data Link Systems (ATDLS) by \$5.2M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Link 16 Network Increment II Cryptographic Modernization (CM)/Frequency Remapping (FR) (2126): JTIDS CM/FR Test Readiness Review (TRR) delayed due to complexities in developing test procedures that apply newer certification requirements to a legacy terminal. MOS Mod TRR, Production Readiness Review (PRR), government testing and Fielding Decision Review / Initial Operating Capability (FDR/IOC) delayed due to HPA power supply redesign in order to achieve technical requirements. EMC Testing and Certification of the EMD kits is delayed due to the availability of the government certification team and the complexity of testing a legacy terminal which has required additional vendor and certification team effort. MOS Mod delays are due to vendor's difficulty in completing the design on the High Power Amplifier (HPA) and additional EMC testing necessary for certification.

Command and Control Processor (C2P) (2126): Acquisition and engineering changes resulted in schedule slips to acquisition milestones, delays to the start of software development, and slips in testing schedules. On 25 Aug 2015, the Milestone Decision Authority (MDA) issued an Acquisition Decision Memorandum (ADM) that eliminated C2P Increment 3, and directed execution of C2P Technology Refresh (TR) and Link 22 under the existing Increment 2 Program.

Link Monitoring and Management Tool (LMMT) (2126): LMMT will be delivered in a limited fielding capacity in FY16 prior to testing of CD 1. DT/OT for Shore and Afloat CD 1 has now been combined and is now scheduled for Q3 FY16. CD2 DT/OT slip to Q4 FY17 and CD3 DT/OT slip to Q3 FY19 due to CVN availability changes.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	
<p>MIDS (3020): TTNT Full Development (terminal) contract strategy changed with the DOD selling off the L Band frequency (where the TTNT terminal was to operate). The Spectrum Reallocation Funding (SRF) came to fruition in late FY15 which caused the MIDS Program Office (MPO) to change the TTNT L Band Contracting strategy. Originally MIDS was to build TTNT in the L band, then add in the S band changes, however with the SRF money a reality, the MPO changed the strategy in order to not pay for development twice of a TTNT terminal and incorporate cost sharing between the two requirements.</p> <p>Because TTNT is now going to operate in the S band, MPO truncated the L band development to only deliver Engineering Design Models (EDMs) at the beginning of FY17 and move the testing and integration requirements to a new S band contract. The MPO will award an S band contract to take what was built in L Band development and make it work in the S band frequency and utilize cost sharing; there are specifically delineated L band tasks and S band tasks. The two different tasks will be tracked separately. The EDMs for L Band will be used in the S Band development effort for integration and testing of the L Band terminals in the S Band frequency. The work done in the TTNT L Band development already completed will compliment and be re-used in the S Band development contract. Delta milestone events will occur for the S Band contract to show the differences between the L and S band (Preliminary Design Review and Critical Design Review). This change to contract and development strategy keeps the TTNT terminal delivery on schedule for the Platform Integration and Test for delivery of the capability to the fleet. This ensures no loss of development already completed, but testing the L band terminals is necessary and the MPO cannot use SRF funding to do any L Band work, so there remains some L Band work left to do on the S band contract.</p> <p>NTCDL (3341): Network Tactical Common Data Link (NTCDL) initial Request for Proposal (RFP) release was delayed. RFP was released Oct 2015. Proposals have been received and source selection is now in process to support a Q4FY16 contract award with discussions. FY17 funding is on track to: conduct Integrated Baseline Review (IBR) in Q1 to finalize initial development schedule, conduct a Q2 Preliminary Design Review (PDR) and Q4 Critical Design Review (CDR) assessing development progress and develop an initial product baseline, begin development of 2 Engineering Development Models (EDMs), begin developing required Milestone C documentation, initiate system software activity to continue developing link management capability and user interface software for Government Furnished Software delivery, begin system engineering efforts for NTCDL integration and internal/external interface management, and build test plans to support developmental test and operational assessment (DT/OA).</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>				Project (Number/Name) 2126 / <i>ATDLS Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2126: <i>ATDLS Integration</i>	663.778	51.219	45.027	37.995	-	37.995	22.990	24.723	25.424	25.996	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and improves the Navy's Tactical Data Link (TDL) systems. It includes the Advanced Tactical Data Link Systems (ATDLS) Integration Programs, specifically Link 16 Network, Command and Control Processor (C2P) and Link Monitoring and Management Tool (LMMT).

ATDLS Integration Program develops new and improved capabilities for Navy TDL users. The Navy Link 16 Network Increment II consists of Dynamic Network Management (DNM), Cryptographic Modernization (CM) and Frequency Remapping (FR). C2P Technology Refresh (TR) and C2P Interoperability will modernize legacy C2P processing components to address C2P component obsolescence and fleet interoperability issues. C2P is a critical component in the Aegis Ballistic Missile Defense (BMD) architecture. Modernization is a service life extension program required to sustain C2P support of Naval Integrated Air and Missile Defense (IAMD) and BMD capabilities. Link 22 development and integration into the C2P allows for standard data link communication with Coalition forces. LMMT will upgrade commercial off-the-shelf hardware and modernize software operating systems. LMMT will improve TDL performance monitoring and management in support of the Integrated Air & Missile Defense (IAMD) and Ballistic Missile Defense (BMD) missions.

Link 16 Network Increment II: (1) conduct DNM Developmental Test (DT)/Operational Test (OT) and correct DNM deficiencies (2) develop and implement CM and FR mandates as a product improvement into Link 16 terminals and integration into shore sites, ship (NGC2P, Next Generation Command and Control Processor), and current Navy Joint Tactical Information Distribution System (JTIDS) airborne platforms; (3) DT/OT of Navy platform CM/FR modifications; (4) provide product improvement for continued production capability MIDS-on-ship (MOS) Modernization (MOS Mod) and extensibility to new Tactical Data Link capabilities of shipboard Link 16 terminals, (5) qualification of replacement shipboard Link 16 antenna to replace end of life existing antenna.

FY 2017 Justification: Conduct government testing of the JTIDS CM/FR Low Rate Initial Production units and deficiency correction. Conduct government developmental and operational testing. Prepare for JTIDS CM/FR decision review. The E-2C Program Office (PMA-231) will complete software modifications to the E-2C host processing required to implement the CM/FR capability. PMA 231 will conduct E-2C government testing of JTIDS CM/FR. Funding will also provide for MOS CM/FR to complete integrated testing and deficiency correction of the MOS CM/FR with the High-Power Amplifier (HPA) Switch necessary for integration of the MIDS LVT Block Updated 2 configuration. JTIDS and MOS CM/FR efforts are in support of NSA and Joint Chiefs of Staff mandates, for the modernization of the cryptographic algorithm used in Link 16 terminals and the Department of Defense and the Department of Transportation Memorandum of Agreement for the implementation of a capability to remap any 14 of the existing 51 frequencies in order to remain operable within the United States and its possessions. All Link 16 terminals are required to have this capability to support Link 16 Interoperability. To address continued production capability and extensibility to new Tactical Data Link capabilities, funding will provide for government testing and deficiency correction of MOS Mod. Continue government testing and deficiency correction of new Link 16 antenna which will replace the obsolete AS-4127A.

Command and Control Processor (C2P) Technology Refresh (TR) funds a product improvement effort to the legacy C2P hardware components and allows C2P software to execute on modern processors, thereby extending its effective service life. Product improvement efforts will include C2P software development, hardware integration,

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update of the C2P development environment to promote sustainability and testing to include Follow-on Test and Evaluation (FOT&E) of the C2P TR baseline. Transform C2P legacy software code with modern supportable software code.

C2P, Phase 3, Increment 2 is planned to include Link 22, which is a modernized replacement for Link 11, providing Beyond Line of Sight (BloS) tactical data communication system utilizing fixed frequency or frequency hopping techniques in the High Frequency (HF) (3-30 Megahertz (MHz)) and/or the Ultra High Frequency (UHF) (225-400 MHz) bands.

FY 2017 Justification: Continue C2P Technology Refresh development and Link 22 software builds.

Link Monitoring and Management Tool (LMMT) is a new system delivered on commercial off-the-shelf hardware providing gateway functions for multiple Tactical Data Link (TDL) interface, routing and display of TDL data to include Link 16 and Joint Range Extension. LMMT is also capable of performing TDL network planning, monitoring, management, data forwarding between the TDLs and providing tactical data to the Global Command and Control System for establishing the Common Operational Picture. LMMT requirements will be incrementally developed and delivered in capability drops via the Joint Capabilities Integration Development System (JCIDS) IT Box approach.

FY 2017 Justification: Funding will provide for Capability Drop 1 (CD) Afloat DT/OT leading to an Afloat Fielding Decision in FY 2017. Funding will also provide for the continuation of CD 2 build and DT/OT.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Link 16 Network Increment II - Dynamic Network Management (DNM)</p> <p style="text-align: right;">Articles:</p> <p>FY 2015 Accomplishments: Conducted MOS DNM operational testing. Corrected critical DNM test deficiencies.</p> <p>FY 2016 Plans: Correct Joint Tactical Information Distribution System (JTIDS) and MOS DNM test deficiencies.</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	1.102	0.121	0.000	0.000	0.000
	-	-	-	-	-
<p>Title: Link 16 Network Increment II - Cryptographic Modernization (CM) / Frequency Remapping (FR)</p> <p style="text-align: right;">Articles:</p> <p>FY 2015 Accomplishments:</p>	19.854	18.812	13.300	0.000	13.300
	2	5	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Initiated contractor qualification and certification of JTIDS CM/FR on Engineering Manufacturing Development (EMD) unit. Conducted JTIDS/MOS CM/FR shipboard integration effort leading to completion of Critical Design Review (CDR). Continued design and development work for JTIDS Air Integration of CM/FR for E-2C. Completed design of MOS Modernization Engineering Manufacturing Development (EMD) units. Provided Link 16 Network integration logistics support.</p> <p>FY 2016 Plans: Complete design and development work for JTIDS Air Integration of CM/FR for E-2C. Continue contractor qualification and certification of JTIDS CM/FR on Engineering Manufacturing Development (EMD) unit. Initiate government testing of JTIDS CM/FR including shipboard integration. Develop HPA switch necessary for integration of MIDS LVT Block Update 2 (BU2) into MOS terminal. Initiate logistics documentation and conduct testing on HPA switch for MOS CM/FR. Initiate government testing on MOS Modernization terminal. Continue vendor development, qualification and certification of MOS Mod EMD units. Continue Link 16 Network integration logistics support.</p> <p>FY 2017 Base Plans: Complete contractor qualification and certification of JTIDS CM/FR on Engineering Manufacturing Development (EMD) unit. Continue government testing and correct identified deficiencies in JTIDS CM/FR LRIP units including shipboard integration. Test the integration of JTIDS CM/FR with the E-2C. Develop MOS CM/FR software modifications necessary for shipboard integration in support of MIDS LVT BU2 changes being performed by the MIDS Program Office. Complete integration and conduct integrated government testing of MOS CM/FR terminal with HPA switch. Continue logistics documentation on HPA switch for MOS CM/FR. Complete vendor development, qualification and certification of MOS Mod EMD units. Conduct government testing on MOS Modernization terminal. Integrate and test MIDS JTRS common baseline terminal into MOS Modernization terminal. Continue Link 16 Network integration logistics support. Initiate at sea testing for Link 16 antenna.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Command and Control Processor (C2P)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	22.364	19.783	19.357	0.000	19.357
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Complete CDR and PDR and continue C2P TR development in preparation of Developmental Test Readiness Review/Operational Test Readiness Review (DTRR/OTRR) and Developmental Test/Operational Test (DT/OT). Commence Link 22 development.</p> <p>FY 2016 Plans: Continue C2P TR development. Conduct C2P Tech Refresh TRR event and commence IV&V testing. Continue Link 22 development and integration and complete Link 22 Software Build 1.</p> <p>FY 2017 Base Plans: Continue C2P TR and Link 22 development. Complete C2P TR IV&V testing. Conduct C2P Link 22 TRR event and commence Link 22 IV&V testing. Conduct Follow-on Test and Evaluation (FOT&E) of the C2P TR baseline. Complete Link 22 Software Build 2. Transform C2P legacy software to modern C2P software language for Build 1.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Link Monitoring and Management Tool (LMMT)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Conducted Capability Drop (CD) 1 IV&V and Navy Interoperability Certifications.</p> <p>FY 2016 Plans: Begin limited fielding for non-operational shore sites. Conduct CD 1 Joint Interoperability Certifications. Conduct combined DT/OT for Ashore and Afloat CD 1. Conduct CD 2 BD and commence CD 2 development and testing efforts.</p> <p>FY 2017 Base Plans: Conduct FDR/IOC for CD 1. Continue CD 2 build and conduct CD 2 DT/OT. Conduct CD 3 BD.</p> <p>FY 2017 OCO Plans: N/A</p>	5.699	6.311	5.338	0.000	5.338
<p>Title: Joint Aerial Layer Network (JALN)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	2.200	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continued activities intended to improve USN TDL capabilities when in a jamming environment. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	51.219	45.027	37.995	0.000	37.995

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/2614: <i>Adv Tact Data Link Sys (ATDLS)</i>	16.568	23.069	30.105	-	30.105	45.988	44.174	44.618	45.528	Continuing	Continuing

Remarks

D. Acquisition Strategy

The JTIDS Crypto Modernization (CM)/Frequency Remapping (FR) development and Low Rate Initial Production (LRIP) contract was awarded to Data Link Solutions (DLS). The associated production contract for JTIDS CM/FR will be competitively awarded after Operational Test. MOS CM/FR will be accomplished through integration of the MIDS LVT Block Upgrade 2 (BU) into the existing MOS cabinet. MOS CM/FR integration will require development of an High-Power Amplifier (HPA) bypass and update to the MOS Terminal Controller software. HPA bypass development is being conducted by SSC Pacific. The MOS Terminal Controller software will be contracted in FY16. MOS MOD contract will provide three Engineering Manufacturing Development (EMD) units for developmental and operational testing. The MOS MOD contract will also provide full rate production units.

The C2P Technology Refresh (TR) and Link 22 development contract was awarded to Northrop Grumman. The Data Terminal Set (DTS) contract awarded to support the Link 11/Link 22 functions of the C2P system. Early engineering hardware procured on CALI contract to support TR and Link 22 baseline development and at-sea testing. The C2P Technology Refresh and Link 22 production contract will be competitively awarded and will support LRIP and Full Rate production units. Purchase of Modernized Link Level Crypto (MLLC) hardware procured from the MLLC production contract in support of C2P TR/Link 22 fielding.

The Link Monitoring and Management Tool (LMMT) capability will replace previously-fielded ADSI systems. LMMT will leverage existing Government-off-the-Shelf (GOTS) software and Commercial-off-the-Shelf (COTS) hardware. LMMT capabilities are implemented primarily in software and will be developed in capability drops

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(CDs). Existing GOTS software will be updated to incorporate network performance monitoring and management capabilities by SPAWAR System Center (SSC). Afloat fielding decision will be accomplished after Capability Drop (CD) Developmental Test/Operational Test (DT/OT).

E. Performance Metrics

Link 16 Network Dynamic Network Management (DNM): Successfully achieve Initial Operational Capability. Successfully conduct Full Deployment Decision Review. Successfully complete Operation Test Readiness Review. Successfully complete Developmental Test / Operational Test.

Link 16 Network Cryptographic Modernization: Successful implementation of updated cryptographic algorithm as specified by National Security Agency Certification in Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ship (MOS), and MOS Modernization (MOS Mod) Link 16 terminals.

Link 16 Network Frequency Remapping: Successful implementation of a Frequency Remapping capability as specified in Department of Defense/Department of Transportation Memorandum of Agreement regarding the 960-1215 MHz Frequency Band of 31 Dec 02 in Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) on Ship (MOS) and MOS Modernization (MOS Mod) Link 16 Terminals.

Link 16 Antenna: Meet existing antenna performance specifications.

Link 16 Network Production Capability: Production Shipboard Link 16 Terminals available to meet new construction shipboard requirements.

Command and Control Processor (C2P): Successfully achieve C2P Technology Refresh Fielding and thereby maintain operational availability.

Link 22: Successfully achieve Link 22 implementation fielding, meeting operational requirement.

LMMT: Successfully meet operational requirements and achieve Fielding Decision Reviews (FDR) for Capability Drops 1, 2 and 3.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205604N / Tactical Data Links				Project (Number/Name) 2126 / ATDLS Integration					
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Product Development and Integration	Various	Various : Various	363.158	0.000		0.000		0.000		-		0.000	0.000	363.158	363.158
Link 16 Network Development (JTIDS)	C/CPIF	DLS (BAE/ Rockwell) : Wayne, NJ	55.709	5.301	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Link 16 Network Development (MOS)	C/FFP	DLS (BAE/ Rockwell) : Wayne, NJ	0.034	0.000		0.000		0.000		-		0.000	0.000	0.034	Continuing
Link 16 Network Development (MIDS LVT/ MIDS J)	WR	MIDS IPO : San Diego, CA	6.614	0.000		0.300	Jun 2016	0.000		-		0.000	0.000	6.914	Continuing
Link 16 Network E-2C Integration	WR	PMA 231 : Pax River, MD	2.332	3.564	Oct 2014	2.774	Jan 2016	2.614	Oct 2016	-		2.614	Continuing	Continuing	Continuing
Link 16 Network Development (MOS MOD)	C/FPIF	DLS (BAE/ Rockwell) : Wayne, NJ	10.081	4.206	Dec 2014	2.194	Feb 2016	0.448	Oct 2016	-		0.448	Continuing	Continuing	Continuing
Link 16 Network Software	WR	SPAWARSYSCEN PAC : San Diego, CA	2.996	0.379	Jan 2015	0.408	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Link 16 Network Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	2.206	0.346	Oct 2014	0.220	Oct 2015	0.103	Nov 2016	-		0.103	Continuing	Continuing	Continuing
Link 16 Network JTIDS Depot Repair Bench Update	WR	Warner Robins Air Logistics Center : Warner Robins, GA	0.000	0.000		5.486	Oct 2015	4.848	Dec 2016	-		4.848	0.000	10.334	-
Link 16 Network Technical Design Agents	C/CPFF	SeaPort-E : San Diego, CA	2.643	0.000		2.195	Oct 2015	1.456	Nov 2016	-		1.456	0.000	6.294	-
Link 16 Network Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	46.358	4.656	Oct 2014	2.322	Oct 2015	1.530	Oct 2016	-		1.530	Continuing	Continuing	Continuing
Link 16 Network IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	2.469	0.602	Oct 2014	1.196	Oct 2015	0.380	Oct 2016	-		0.380	Continuing	Continuing	Continuing
C2P Development (Tech Refresh)	C/IDIQ	Northrop Grumman : San Diego, CA	12.952	6.992	Feb 2015	1.500	Jun 2016	0.872	May 2017	-		0.872	Continuing	Continuing	Continuing
C2P Development (Link 22)	C/IDIQ	Northrop Grumman : San Diego, CA	0.595	2.141	Feb 2015	1.500	Jul 2016	0.872	May 2017	-		0.872	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C2P Development Data Terminal Set	C/IDIQ	TBD : TBD	0.000	1.227	Aug 2015	4.390	Jan 2016	1.647	Dec 2016	-		1.647	0.000	7.264	-
C2P Development (Interoperability)	WR	SPAWARSYSCEN PAC : San Diego, CA	6.599	0.000		0.000		0.000		-		0.000	0.000	6.599	Continuing
C2P Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	10.137	7.937	Oct 2014	0.690	Oct 2015	4.037	Oct 2016	-		4.037	Continuing	Continuing	Continuing
C2P IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	2.336	2.850	Oct 2014	3.691	Oct 2015	3.842	Oct 2016	-		3.842	Continuing	Continuing	Continuing
C2P Development & Integration	WR	SPAWARSYSCEN PAC : San Diego, CA	3.711	0.332	Oct 2014	6.151	Oct 2015	5.706	Oct 2016	-		5.706	0.000	15.900	-
C2P Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	3.802	0.457	Oct 2014	0.250	Oct 2015	0.254	Nov 2016	-		0.254	Continuing	Continuing	Continuing
LMMT Integrated Logistics Support	C/CPFF	SeaPort-E : San Diego, CA	0.383	0.300	Oct 2014	0.350	Oct 2015	0.350	Nov 2016	-		0.350	Continuing	Continuing	Continuing
LMMT Development	WR	SPAWARSYSCEN PAC : San Diego, CA	2.636	1.962	Oct 2014	2.670	Oct 2015	1.938	Oct 2016	-		1.938	Continuing	Continuing	Continuing
LMMT Systems Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	0.697	2.100	Oct 2014	1.000	Oct 2015	1.000	Oct 2016	-		1.000	Continuing	Continuing	Continuing
LMMT IV&V	WR	SPAWARSYSCEN PAC : San Diego, CA	0.000	0.312	Oct 2014	0.667	Oct 2015	0.800	Oct 2016	-		0.800	Continuing	Continuing	Continuing
JALN Development	WR	AFRL : W. Patterson AFB, OH	4.400	2.200	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			542.848	47.864		39.954		32.697		-		32.697	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ATDLS Test and Evaluation	Various	Various : Various	65.171	0.000		0.000		0.000		-		0.000	0.000	65.171	65.171
Link 16 Network T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	8.487	1.102	Oct 2014	1.264	Oct 2015	1.586	Oct 2016	-		1.586	Continuing	Continuing	Continuing

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2P T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	1.951	0.000		0.150	Jan 2016	0.150	Oct 2016	-		0.150	0.000	2.251	Continuing
LMMT T&E	WR	SPAWARSYSCEN PAC : San Diego, CA	0.450	0.700	Oct 2014	1.250	Oct 2015	0.800	Oct 2016	-		0.800	Continuing	Continuing	Continuing
Subtotal			76.059	1.802		2.664		2.536		-		2.536	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ATDLS System Engineering Support	Various	Various : Various	20.177	0.000		0.000		0.000		-		0.000	0.000	20.177	20.177
Link 16 Network Contractor Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	9.533	0.000		0.000		0.000		-		0.000	0.000	9.533	Continuing
Link 16 Network Government Engineering Support	WR	SPAWARSYSCEN PAC : San Diego, CA	6.278	0.000		0.000		0.000		-		0.000	0.000	6.278	Continuing
Link 16 Network Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	3.729	0.800	Oct 2014	0.573	Oct 2015	0.335	Nov 2016	-		0.335	Continuing	Continuing	Continuing
C2P Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	4.783	0.428	Oct 2014	1.461	Oct 2015	0.800	Nov 2016	-		0.800	Continuing	Continuing	Continuing
LMMT Program Management Support	C/CPFF	SeaPort-E : San Diego, CA	0.371	0.325	Oct 2014	0.375	Oct 2015	0.450	Nov 2016	-		0.450	Continuing	Continuing	Continuing
C2P Systems Engineering Support	C/CPFF	SeaPort-E : San Diego, CA	0.000	0.000		0.000		1.177	Nov 2016	-		1.177	0.000	1.177	-
Subtotal			44.871	1.553		2.409		2.762		-		2.762	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	663.778	51.219	45.027	37.995	-	37.995	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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Fiscal Year	2015				2016				2017				2018				2019				2020				2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones C2P																																
Engineering Milestones C2P																																
Test & Evaluation Milestones C2P																																
Production Milestones C2P																																

Legend:
 C2P - Command and Control Processor
 CDR - Critical Design Review
 DT - Developmental Test
 DTRR - Developmental Test Readiness Review
 FRPDR - Full Rate Production Decision Review
 IOC - Initial Operating Capability
 MS C - Milestone C
 OA - Operational Assessment
 OT - Operational Test
 OTRR - Operational Test Readiness Review
 PDR - Preliminary Design Review
 PRR - Production Readiness Review

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones LMMT				LFA ▲		BD ▲				CD 1 △ FDR/IOC		CD 2 △		FDR △				CD 3 △		CD 4 △ BD						CD 3 △ FOC		CD 4 △ FOC
Engineering Milestones LMMT						BTR ▲				CD 1 △ FTR				FTR △				CD 4 △ BTR										
Test & Evaluation Milestones LMMT								CD 1 △ DT/OT <i>Ashore/Afloat</i>				CD 2 △ DT/OT								CD 3 △ DT/OT								

Legend:
 BD - Build Decision CD - Capability Drop FDR - Fielding Decision Review FTR - Fielding Technical Review LFA - Limited Fielding ADM
 BTR - Build Technical Review DT - Developmental Test FOC - Full Operational Capability IOC - Initial Operating Capability OT - Operational Test

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2126				
C2P Link 22 Preliminary Design Review	1	2015	1	2015
C2P Tech Refresh Preliminary Design Review	1	2015	1	2015
Link 16 Network JTIDS DNM Full Developmental Decision Review	1	2015	1	2015
Link 16 Network DNM Initial Operating Capability	2	2015	2	2015
C2P Tech Refresh Critical Design Review	3	2015	3	2015
Link 16 Network JTIDS CM/FR Integration (Air) Critical Design Review	4	2015	4	2015
C2P Link 22 Critical Design Review	4	2015	4	2015
LMMT Limited Fielding ADM	4	2015	4	2015
Link 16 Network JTIDS CM/FR Test Readiness Review	1	2016	1	2016
LMMT CD 2 Build Technical Review	1	2016	1	2016
LMMT CD 2 Build Decision	2	2016	2	2016
Link 16 Network MOS Modernization Test Readiness Review	2	2016	2	2016
Link 16 Network MOS Modernization Production Readiness Review	2	2016	2	2016
Link 16 Network MOS DNM Operational Test Readiness Review	2	2015	2	2015
Link 16 Network MOS DNM Follow-On Operational Test & Evaluation	3	2016	3	2016
C2P Link 22 Software Build 1	3	2016	3	2016
LMMT CD 1 Developmental/Operational Test	3	2016	3	2016
LMMT CD 1 Fielding Technical Review	1	2017	1	2017
Link 16 Network MOS MOD Developmental Test Readiness Review / Operational Test Readiness Review	1	2017	1	2017
Link 16 Network MOS DNM Fielding Decision Review	1	2017	1	2017
C2P Modernization Software Build 1	2	2017	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 2126 / <i>ATDLS Integration</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Link 16 Network MOS MOD Developmental Test / Operational Test	2	2017	2	2017
LMMT CD 1 Fielding Decision Review/Initial Operating Capability	2	2017	2	2017
Link 16 Network JTIDS CM/FR (Ship/Air) Developmental Test	2	2017	2	2017
Link 16 Network JTIDS CM/FR (Ship/Air) Developmental Test Readiness Review	2	2017	2	2017
Link 16 Network DNM Full Operating Capability	2	2017	2	2017
LMMT CD 3 Build Technical Review	3	2017	3	2017
Link 16 Network JTIDS CM/FR (Ship/Air) Follow-On Operational Test & Evaluation	3	2017	3	2017
Link 16 Network JTIDS CM/FR (Ship/Air) Operational Test Readiness Review	3	2017	3	2017
LMMT CD 3 Build Decision	4	2017	4	2017
LMMT CD 2 Developmental/Operational Test	4	2017	4	2017
Link 16 Network MOS MOD Fielding Decision Review/Initial Operating Capability	4	2017	4	2017
C2P Link 22 Software Build 2	4	2017	4	2017
Link 16 Network JTIDS CM/FR Fielding Decision Review/Initial Operating Capability	2	2018	2	2018
Link 16 Network MOS CM/FR Developmental Test Readiness Review / Operational Test Readiness Review	2	2018	2	2018
LMMT CD 2 Fielding Technical Review	2	2018	2	2018
Link 16 Network MOS CM/FR Developmental Test / Follow-On Operational Test and Evaluation	2	2018	2	2018
LMMT CD 2 Fielding Decision Review	3	2018	3	2018
C2P Link 22 Software Build 3	3	2018	3	2018
C2P Link 22 Operational Assessment	4	2018	4	2018
Link 16 Network CM/FR Fielding Decision Review	4	2018	4	2018
C2P Link 22 Milestone C	1	2019	1	2019
C2P Link 22 Developmental Test Readiness Review	2	2019	2	2019
LMMT CD 4 Build Technical Review	2	2019	2	2019
LMMT CD 3 Developmental/Operational Test	3	2019	3	2019
LMMT CD 4 Build Decision	3	2019	3	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 2126 / <i>ATDLS Integration</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C2P Link 22 Developmental Test	4	2019	4	2019
LMMT CD 3 Fielding Technical Review	2	2020	2	2020
C2P Link 22 Operational Test Readiness Review	2	2020	2	2020
LMMT CD 3 Fielding Decision Review	2	2020	2	2020
C2P Tech Refresh Production Readiness Review	3	2020	3	2020
C2P Link 22 Operational Test	3	2020	3	2020
C2P Link 22 Production Readiness Review	4	2020	4	2020
C2P Link 22 Initial Operating Capability/Full Rate Production Decision Review	4	2020	4	2020
LMMT CD3 Full Operational Capability (FOC)	4	2020	4	2020
LMMT CD4 Full Operational Capability (FOC)	3	2021	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>				Project (Number/Name) 3020 / <i>MIDS/JTRS</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3020: <i>MIDS/JTRS</i>	112.827	70.117	70.241	57.406	-	57.406	21.088	17.834	18.119	18.495	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 554

Note

In accordance with the Acquisition Decision Memorandum dated 11 July 2012, the Joint Tactical Radio Systems Programs of Record (JTRS PORs) transitioned to a Military Department-managed program. MIDS transitioned to the Navy under PE 0205604N but was formerly in PE 0604280N.

A. Mission Description and Budget Item Justification

The Multifunctional Information Distribution System (MIDS) program consists of two (2) products, MIDS Low Volume Terminal (LVT) and MIDS Joint Tactical Radio System (JTRS). MIDS-LVT provides Link 16 capability to platforms that were unable to employ Joint Tactical Information Distribution System due to space and weight constraints. The MIDS-LVT effort is multinational (U.S., France, Germany, Italy, and Spain) with joint Service participation (Navy, Army, and Air Force). The Department of Defense (DoD) established the program to design, develop, and deliver low volume, lightweight tactical information system terminals for U.S. and Allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT provides interoperability with North Atlantic Treaty Organization (NATO) users, significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal design is smaller, lighter, highly reliable, interoperable with Joint Tactical Information Distribution System (JTIDS) Class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets.

MIDS JTRS, designed as a Pre-Planned Product Improvement (P3I) and executed as an Engineering Change Proposal (ECP) to the production MIDS-LVT configuration, completed qualification in the first quarter of fiscal year 2010. It facilitated the JTRS incremental approach for fielding advanced JTRS transformational networking capability and transformed the MIDS-LVT into a 4-channel, Software Communications Architecture (SCA) compliant, Joint Tactical Radio. A form-fit-function replacement to MIDS-LVT, MIDS JTRS also adds three programmable 2 Megahertz (MHz) to 2 Gigahertz (GHz) channels capable of hosting the JTRS legacy and networking waveforms. In addition to the Link 16, Tactical Air Navigation, and voice functionality found in MIDS-LVT, MIDS JTRS has four channels and adds capabilities such as Link 16 Enhanced Throughput, Link 16 Frequency Re-mapping, software programmability, Cryptographic Modernization, and Four Net Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4). With CMN-4, MIDS JTRS also utilizes Tactical Targeting Network Technology for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links. These capabilities provide Joint Airborne Network-Tactical Edge functionality to run advanced mission applications in a cross-platform/cross-domain tactical network enterprise and the ability to simultaneously participate in four Link 16 Nets.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: MIDS	70.117	70.241	57.406	0.000	57.406
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Completed the development and implementation of CMN-4 for MIDS JTRS. Began test and evaluation and collecting Operational Assessment data. Delivered MIDS JTRS CMN-4 PRTs. Awarded Lot 4 for MIDS JTRS Production. Continued Block Cycle 2 (BC2) (MIDS On Ship Modernization) to include the Link 16 High Powered Amplifier.</p> <p>Continued full development effort for Tactical Targeting Networking Technology (TTNT) for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links. Continued the hardware and software development to include adding the Protected Core Processor Engineering Change Proposal to the baseline. Conducted Critical Design Review.</p> <p>Continued the Crypto Modernization(CM)/Frequency ReMapping(FR)/Enhanced Throughput(ET) for BU2 capability and enhancement efforts for MIDS-LVT to include completing the hardware design and development. Completed the software design and development. Conducted CDR for BU2. Began qualification and certification efforts and first article qualification testing. Began software bind to incorporate Block Cycle 9 as the baseline for BU2 terminals.</p> <p>Continued MIDS Modernization efforts to include Small Business Innovation Research transition opportunities including a Small Form Factor terminal. Conducted the demonstration of MIDS Modernization and awarded the development effort for MIDS Modernization Increment 1.</p> <p>Continued to incorporate new waveforms such as Multi-Function Advanced Data Link (MADL), Common Data Link (CDL), and others into the MIDS JTRS terminal. Continued MIDS systems engineering, communication security, IA and program management support.</p> <p>FY 2016 Plans: Achieve Operational Assessment and Readiness for CMN-4 in MIDS JTRS. Conduct Full Operational Test and Evaluation. Complete BC2 (MIDS on Ship Modernization). Award Lot 5 for MIDS JTRS Production. Merge the BC2 baseline with CMN-4 baseline (Block Cycle 3) and upgrade the Crypto Sub System for incorporation into the TTNT development and testing.</p> <p>Continue full development effort for TTNT for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links for the L band. Begin S band technology development (contract) to incorporate the existing TTNT L band terminal development into the TTNT S band frequency (no SRF funding will be used on the L band requirement, but there are L band requirements in the S band contract-</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>cost sharing). The L band requirements (Navy RDTE) are delineated tasks and tracked separately from the S band requirements (SRF funded). Conduct Delta Preliminary Design Review for the TTNT L band and S band terminals. Award contract for the TTNT S Band terminal development to include test and integration of the L Band terminal.</p> <p>Continue the qualification and certification efforts and first article qualification testing for MIDS-LVT BU2. Complete the software bind to incorporate Block Cycle 9 as the baseline for BU2 terminals.</p> <p>Continue MIDS Modernization Increment 1 efforts to include specification development to define the Functional and Allocated baseline requirements.</p> <p>Continue to incorporate new waveforms such as MADL, CDL, and others into the MIDS JTRS terminal. Continue MIDS systems engineering, communication security, IA and program management support.</p> <p>Begin work on MIDS Modernization Increment 2 for Air Dominance Assured Communications to include the design. Begin Link 16 waveform development fixes/updates for incorporation into the new MIDS JTRS hardware (CMN-4 and TTNT) terminals.</p> <p><i>FY 2017 Base Plans:</i> Complete collecting Operational Assessment data of Concurrent Multi-Netting with Concurrent Contention Receive (CMN-4) for MIDS JTRS. Receive Operational Testing Report and achieve Initial Operational Capability for MIDS JTRS CMN-4. Award Lot 6 for MIDS JTRS Production.</p> <p>Complete the efforts for Tactical Targeting Network Technology (TTNT) for MIDS JTRS Naval Integrated Fire Control Counter Air and From the Air Advanced Tactical Data Links for L band with the Engineering Design Model (EDM) delivery. Conduct Delta Critical Design Review for TTNT L and S band (new S band contract with cost sharing). Award the Production Representative Terminal (PRT) contract for TTNT. Continue development of TTNT S Band contract including integration of the L and S Band Transceivers, TTNT External Power Amplifiers and High Powered Amplifiers (SRF funding will not be used on the L band requirements; L Band requirements on the S band contract include test and integration of the L band terminal only-delineated tasks will be tracked separately).</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete the Crypto Modernization (CM)/Block Upgrade (BU) 2 qualification and certification efforts and FAQT. Begin the developmental and service platform/operational delta testing required for the BU2 upgrades to the MIDS-LVT terminals. Award BU2 retrofit contracts.					
Continue to incorporate new waveforms such as MADL, CDL, and others into the MIDS JTRS terminal. Continue MIDS systems engineering, communication security, IA and program management support.					
Complete MIDS Modernization Increment 1 effort. Continue the Link 16 Waveform Development to incorporate into CMN-4 and TTNT Terminals. Continue the development MIDS Modernization Increment 2 for the Link 16 waveform.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	70.117	70.241	57.406	0.000	57.406

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

MIDS JTRS development was initiated as a major modification to the MIDS-LVT using an Engineering Change Proposal to the existing production contracts. Development efforts included the Phase 2B Core terminal. The U.S. prime contractors from the MIDS-LVT program, Data Link Solutions (DLS) and ViaSat Inc., cooperatively designed and developed the Core terminal. Each prime contractor built and qualified Production Verification Terminals. The U.S. implemented a continuous competition strategy between DLS and ViaSat that will be maintained throughout the MIDS JTRS production phase. This strategy was successfully used on MIDS-LVT production. The FY17 budget supports the development and implementation of Crypto Modernization, Frequency Remapping, and Enhanced Throughput capabilities for the MIDS-LVT terminal. It also supports the completion of the L-band Tactical Targeting Network Technology (TTNT) development and continuation of the S band TTNT terminal development (to include test and integration of the L band terminal) as well as the TTNT waveform into MIDS JTRS. It supports the completion of the development for MIDS Modernization Increment 1 efforts, beginning MIDS Modernization Increment 2 efforts and conducting future Link 16 Waveform development.

E. Performance Metrics

The MIDS-LVT and MIDS JTRS programs are employing mature, software-defined radio technologies and developing hundreds of thousands of lines of code. These software metrics are used to quantify the quality and progress of each software product's development over time. MIDS employs earned value metrics to monitor contract performance on its prime development contracts, as required.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0205604N / <i>Tactical Data Links</i>	3020 / <i>MIDS/JTRS</i>

MIDS-LVT: The 11 performance measures are: L16 Waveform Compatibility, L16 Message Standards, L16 IER; Interoperability, L16 Coded Error Message Probability, Weight/Volume, L16 JAM Resistance, L16 Voice Channels, L16 Communication Range Data, L16 Communications Range Voice, L16 Relay.
MIDS JTRS: The 15 performance measures are: L16 Waveform Compatibility, L16 Waveform Standards, L16 Coded Error Message Probability, L16 Jamming Resistance, L16 Communication Range-Data, L16 Communications Range-Voice, L16 Relay, Start-up (Terminal Single Channel), Operational Communications - Passive Synchronization, Operational Communications - Automatic Message Acknowledgement, Operational Communications - Multi-Net, Operational Communications, Crypto Control, Navigation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / MIDS/JTRS
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development Prior Years	Various	Various : Various	6.062	0.000		0.000		0.000		-		0.000	0.000	6.062	6.062
MIDS JTRS NIFCA TTNT Full Development	C/CPFF	DLS : Cedar Rapids, IA	11.600	36.610	Jan 2015	12.500	Mar 2016	9.969	Dec 2016	-		9.969	Continuing	Continuing	Continuing
MIDS JTRS NIFCA TTNT Full Development	C/CPFF	ViaSat : San Diego, CA	12.559	10.050	Jan 2015	7.145	Nov 2015	7.937	Dec 2016	-		7.937	Continuing	Continuing	Continuing
MIDS JTRS NIFCA TTNT Waveform Development	C/CPFF	Rockwell Collins : Wayne, NJ	7.713	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MIDS-LVT BU2 Full Development	C/CPIF	DLS : Cedar Rapids, IA	17.000	1.859	Feb 2015	9.423	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
MIDS-LVT BU2 Full Development	C/CPIF	ViaSat : San Diego, CA	23.000	0.335	Jan 2015	9.537	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
MIDS-LVT BU2 Software Full Development	C/CPIF	BAE : Wayne, NJ	11.400	8.050	Dec 2014	4.844	Dec 2015	1.220	Dec 2016	-		1.220	Continuing	Continuing	Continuing
MIDS-LVT LCM	C/FFP	ViaSat : San Diego, CA	0.095	2.094	Dec 2014	0.000		0.000		-		0.000	0.000	2.189	2.189
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	DLS : Cedar Rapids, IA	2.010	0.000		0.498	Mar 2016	1.500	Jun 2017	-		1.500	0.000	4.008	4.008
MIDS JTRS CMN-4 Production Representative Terminals (PRT)	C/FFP	ViaSat : San Diego, CA	2.020	0.000		0.498	Mar 2016	1.500	Jun 2017	-		1.500	0.000	4.018	4.018
TTNT Risk Red/Tech Dev	C/CPFF	DLS : Cedar Rapids, IA	2.045	0.000		0.000		0.000		-		0.000	0.000	2.045	2.045
TTNT Risk Red/Tech Dev	C/CPFF	ViaSat : San Diego, CA	2.214	0.000		0.000		0.000		-		0.000	0.000	2.214	2.214
TTNT Spectrum Relocation	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.064	Sep 2015	0.639	Apr 2016	10.000	Dec 2016	-		10.000	0.000	10.703	10.703
TTNT Spectrum Relocation	C/CPFF	ViaSat : San Diego, Ca	0.000	0.020	Sep 2015	0.639	Apr 2016	5.000	Dec 2016	-		5.000	0.000	5.659	5.659
MIDS JTRS Software Merge BC3	TBD	DLS : Cedar Rapids, IA	0.000	0.000		2.750	Jan 2016	0.000		-		0.000	0.000	2.750	2.750
MIDS JTRS Software Merge BC3	TBD	ViaSat : San Diego, CA	0.000	0.000		2.750	Jan 2016	0.000		-		0.000	0.000	2.750	2.750

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MIDS Modernization	TBD	DLS : Cedar Rapids, IA	0.000	2.624	Mar 2015	1.664	Oct 2015	0.000		-		0.000	0.000	4.288	4.288
MIDS Modernization	TBD	ViaSat : San Diego, CA	0.000	1.843	Mar 2015	1.016	Oct 2015	0.000		-		0.000	0.000	2.859	2.859
Link 16 Waveform Development	TBD	TBD : TBD	0.000	0.000		1.700	Jan 2016	2.000	Jan 2017	-		2.000	0.000	3.700	Continuing
MIDS JTRS CMN-4	C/CPIF	DLS : Cedar Rapids, IA	2.238	0.396	Mar 2015	0.000		0.000		-		0.000	0.000	2.634	2.634
MIDS JTRS CMN-4	C/CPIF	ViaSat : San Diego, Ca	0.000	0.500	Mar 2015	0.000		0.000		-		0.000	0.000	0.500	0.500
MIDS JTRS Block Cycle 2 HPA	C/CPFF	DLS : Cedar Rapids, IA	0.000	0.439	Nov 2014	0.000		0.000		-		0.000	0.000	0.439	0.439
MIDS JTRS Block Cycle 2 HPA	C/CPFF	ViaSat : San Diego, Ca	0.000	0.811	Nov 2014	0.000		0.000		-		0.000	0.000	0.811	0.811
Air Dominance Assured Communications L16 WF (MIDS Mod Incr 2)	TBD	TBD : TBD	0.000	0.000		4.000	Jan 2016	5.000	Jan 2017	-		5.000	0.000	9.000	Continuing
Subtotal			99.956	65.695		59.603		44.126		-		44.126	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Eval Prior Years	Various	Various : Various	1.986	0.000		0.000		0.000		-		0.000	0.000	1.986	1.986
MIDS-LVT BU2 Test Terminals and LCM	C/FFP	ViaSat : San Diego, CA	1.417	0.126	May 2015	0.000		0.000		-		0.000	0.000	1.543	1.543
Modeling and Simulation	WR	NAVAIR : China Lake, CA	1.275	1.165	Nov 2014	3.000	Dec 2015	2.100	Nov 2016	-		2.100	0.000	7.540	Continuing
MIDS JTRS CMN-4/MIDS Mod GFAQT and LAB	WR	SSC : San Diego, CA	0.984	0.000		1.282	Dec 2015	1.392	Mar 2017	-		1.392	0.000	3.658	Continuing
TTNT Link 16 Mod/ Simulation	MIPR	Lincoln Labs : Hanscom AFB, MA	0.370	0.330	Dec 2014	0.200	Dec 2015	0.200	Dec 2016	-		0.200	0.000	1.100	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / MIDS/JTRS
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DTOT CMN-4/MIDS Mod	WR	NAVAIR : China Lake	0.000	0.000		0.000		3.200	Jan 2017	-		3.200	0.000	3.200	3.200
Subtotal			6.032	1.621		4.482		6.892		-		6.892	0.000	19.027	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services Prior Years	Various	Various : Various	1.181	0.000		0.000		0.000		-		0.000	0.000	1.181	1.181
Systems Engineering Support	MIPR	MITRE : Bedford, MA	2.857	1.860	Dec 2014	0.416	Dec 2015	1.551	Nov 2016	-		1.551	0.000	6.684	Continuing
Government Engineering Support TTNT	WR	SSC : San Diego, CA	2.295	0.000		4.433	Dec 2015	4.273	Nov 2016	-		4.273	0.000	11.001	Continuing
Govt Program Support NIFC-CA	WR	NAVAIR : Pax River, MD	0.239	0.700	Dec 2014	0.841	Jan 2016	0.000		-		0.000	0.000	1.780	Continuing
Systems/Software Engineering Suppt	C/CPFF	G2 : San Diego, CA	0.267	0.221	Jul 2015	0.166	Apr 2016	0.264	Apr 2017	-		0.264	0.000	0.918	Continuing
MIDS-LVT BU2 NSA	MIPR	NSA : Fort George Meade, MD	0.000	0.020	Dec 2014	0.300	Mar 2016	0.300	Dec 2016	-		0.300	0.000	0.620	Continuing
Subtotal			6.839	2.801		6.156		6.388		-		6.388	0.000	22.184	-

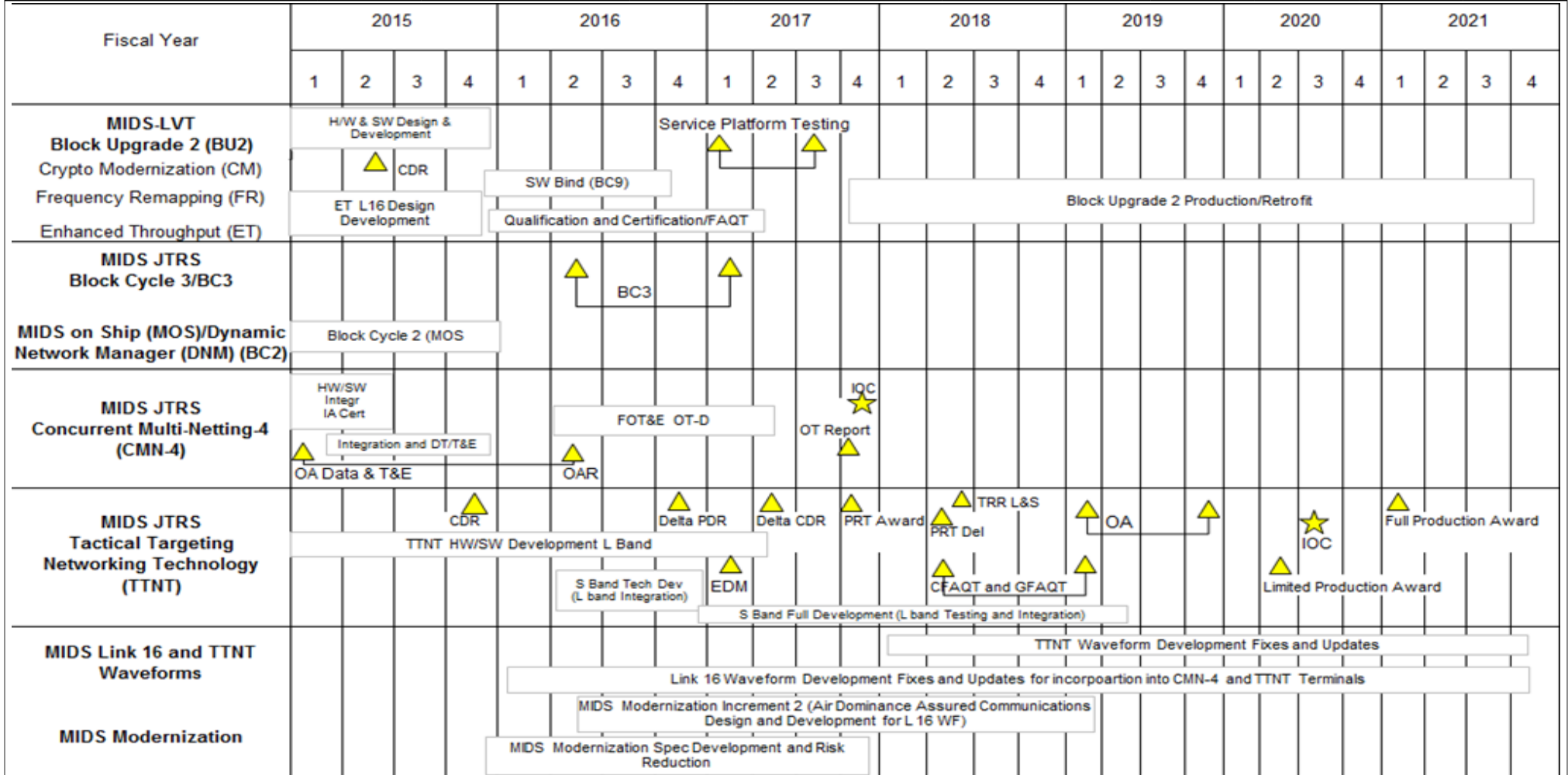
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	112.827	70.117	70.241	57.406	-	57.406	-	-	-

Remarks
 In accordance with the ADM dated 11 July 2012, the Joint Tactical Radio Systems Programs of Record (JTRS PORs) transitioned to a Military Department-managed program. MIDS transitioned to the Navy under PE 0205604N but was formerly in PE 0604280N.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MIDS				
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Hardware (HW) Design and Development	1	2015	4	2015
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): BU2 Critical Design Review	2	2015	2	2015
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Software (SW) Design and Development	1	2015	4	2015
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Enhanced Throughput (ET) Link-16 Design and Development	1	2015	4	2015
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Qualification and Certification/FAQT	4	2015	2	2017
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Software Bind (SW)	4	2015	4	2016
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Service Platform Testing	1	2017	3	2017
MIDS-LVT Block Upgrade 2 (BU2/CM/FR/ET): Block Upgrade 2 Production/Retrofit	4	2017	4	2021
MIDS JTRS Block Cycle 3 (BC3): BC3	2	2016	1	2017
MIDS JTRS MIDS on Ship (MOS)/Dynamic Network Manager (DNM) (BC2): Block Cycle 2 with HPA	1	2015	1	2016
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Hardware/Software Integration	1	2015	2	2015
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Testing/IA Certification	1	2015	2	2015
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Integration and DT/T&E	1	2015	4	2015
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): OA Data and T&E/OAR	1	2015	2	2016
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): Full Operational Test and Eval OT-D	2	2016	2	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): OT Report	4	2017	4	2017
MIDS JTRS Concurrent Multi-Netting-4 (CMN-4): IOC (Initial Operational Capability)	4	2017	4	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Hardware/Software Development (L Band)	1	2015	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3020 / <i>MIDS/JTRS</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Critical Design Review	4	2015	4	2015
MIDS JTRS Tactical Targeting Networking Technology (TTNT): S Band Technology Development (L Band Integration)	2	2016	4	2016
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Delta Preliminary Design Review	4	2016	4	2016
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Engineering Design Model	1	2017	1	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Delta Critical Design Review	2	2017	2	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): S Band Full Development (L Band Testing and Integration)	4	2016	2	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Award	4	2017	4	2017
MIDS JTRS Tactical Targeting Networking Technology (TTNT): PRT Deliveries	2	2016	2	2016
MIDS JTRS Tactical Targeting Networking Technology (TTNT): CFAQT and GFAQT	2	2018	1	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): TTNT Technolgy Readiness Review (TRR)	2	2016	2	2016
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Operational Assessment	1	2019	4	2019
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Limited Production	2	2020	2	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): IOC (Initial Operational Capability)	3	2020	3	2020
MIDS JTRS Tactical Targeting Networking Technology (TTNT): Full Production Award	1	2021	1	2021
MIDS Link 16 and TTNT Waveform: Link 16 Waveform Development Fixes and Updates	1	2016	4	2021
MIDS Link 16 and TTNT Waveform: TTNT Waveform Development Fixes and Updates	1	2018	4	2021
MIDS Modernization: MIDS Modernization Spec Development	4	2015	4	2017
MIDS Modernization: MIDS Modernization Inc 2 (Air Dominance Assured Communications)	2	2016	1	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>				Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3341: <i>Network Tactical Common Data Link</i>	16.926	14.247	27.093	29.384	-	29.384	16.119	0.000	0.000	0.000	0.000	103.769
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Funding was realigned in FY 18 from OPN and OMN to this budget to align with development schedule requirements for NTCDL.

A. Mission Description and Budget Item Justification

Network Tactical Common Data Link (NTCDL) provides the ability to transmit/receive real-time Intelligence, Surveillance, and Reconnaissance (ISR) data simultaneously from multiple sources (surface, airborne, sub-surface, man-portable), and exchange command and control information (voice, data, imagery, and Full Motion Video) across dissimilar Joint, Service, Coalition, and civil networks. NTCDL provides warfighters with the capability to support multiple, simultaneous, networked operations with currently fielded Common Data Link (CDL)-equipped platforms (e.g. F/ A-18, P-3, and MH-60R), in addition to next generation manned and unmanned platforms (e.g., P-8, Triton, UCLASS, and Fire Scout). NTCDL is an incremental capability (surface, airborne, sub-surface, man-portable) providing a modular, scalable, multiple-link networked communications. NTCDL benefits the fleet by providing horizon extension for line-of-sight sensor systems for use in time critical strike missions. NTCDL counters Anti-Access/Area Denial (A2/AD) through its relay capability, and supports Tasking Collection Processing Exploitation Dissemination (TCPED) through its ISR networking capability. Additionally, NTCDL supports Humanitarian Assistance/Disaster Relief (HA/DR) efforts through its ability to share ISR data across dissimilar Joint, Service, Coalition, and Civil organizations.

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially A2/AD. With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity with the High Capacity Backbone (HCB) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document (ICD) and the JALN-M Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) waveform (Navy Multiband Terminal (NMT)) for intra-battle group DARE communications, a CDL waveform for the HCB cross-link capability, and will leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. Furthermore, Positioning, Navigation, and Timing (PNT) efforts related to the JALN-M Pod will develop a prototype PNT subsystem that will be integrated into the JALN-M Pod, and will provide position and timing data to other Pod subsystems, both with and without Global Positioning System (GPS) connectivity. Because the Pod is being designed to operate in an A2/AD environment, the Pod HCB and XDR (i.e. NMT) subsystems need to be provided with PNT data in the absence of GPS, and the assured PNT subsystem will provide that data.

FY17 will focus on NTCDL product development efforts to include NTCDL Engineering Development Models (EDMs), government software development, development of documentation supporting Milestone C, and efforts associated with Increment 2, to include, airborne terminal research and development of High Capacity Backbone (HCB) and air-to-air relay activities in an Anti- Access/Area Denial (A2/AD) environment.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Network Tactical Common Data Link (NTCDL)</p> <p align="right">Articles:</p> <p>Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.</p> <p>FY 2015 Accomplishments: Completed acquisition and contract documentation, (e.g. Acquisition Program Baseline (APB), Clinger Cohen Act (CCA), Technology Readiness Assessment (TRA), Acquisition Strategy (AS), Acquisition Plan (AP), Should Costs, System Functional Review (SFR), System Engineering Plan (SEP), Test and Evaluation Master Plan (TEMP), Statement of Work (SOW), Contract Data Requirements Lists (CDRLs), and System Performance Specification (SPS), achieve Development Request for Proposal Release Decision Review (DRFPR DR) and Milestone B. Released an Request For Proposal (RFP).</p> <p>FY 2016 Plans: Award NTCDL Contract and conduct post award activities, to include Post Award Conference (PAC) and Integrated Baseline Review (IBR). Complete development of CARD and update PLCCE. Initiate preparation for NTCDL development efforts (e.g. NTCDL Engineering Development Models [EDMs]); Preliminary Design Review (PDR) and Critical Design Review (CDR) System Engineering Technical Review (SETR) events; continue development of Milestone C documentation.</p> <p>FY 2017 Base Plans: Conduct Integrated Baseline Review (IBR) in Q1 between vendor and system engineers to finalize initial development schedule. Continue system engineering support to conduct a Q2 Preliminary Design Review (PDR) and Q4 Critical Design Review (CDR) with the vendor to assess development progress and develop an initial product baseline. Initiate development of 2 Engineering Development Models (EDMs). Initiate development of all required Milestone C documentation. Initiate system software activity to continue developing link management capability and user interface software for Government Furnished Software delivery. Conduct system engineering efforts to support NTCDL development, integration and internal/external interface management. Develop test plans to support developmental test and operational assessment (DT/OA).</p> <p>FY 2017 OCO Plans: N/A</p>	9.047	13.213	15.368	0.000	15.368
Articles:	-	2	-	-	-
<p>Title: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB)</p> <p align="right">Articles:</p>	5.200	13.880	14.016	0.000	14.016
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Network Tactical Common Data Link (NTCDL) High Capacity Backbone (HCB) efforts will support Joint Aerial Layer Network-Maritime (JALN-M) System of Systems development, integration, and testing. Efforts will include the development of capabilities to integrate shipboard NTCDL terminals with the HCB in an Anti-Access/Area Denial (A2/AD) environment.</p> <p>FY 2015 Accomplishments: Supported JALN-M System of Systems (SoS) development, Integration & Testing, ICD/ECR development and procurement of the HCB terminals. Developed capabilities to integrate shipboard NTCDL terminals and Mobile GIG Entry Point (MGEP) with HCB system. Facilitated the development of the design specifications of JALN-M payload requirements for the integration of an airborne prototype Pod, MGEP and shipboard systems.</p> <p>FY 2016 Plans: Continue to support JALN-M System of Systems development, Integration & Testing, and FY18 demo planning. Funding will be used to design, develop, and test the High Capacity Backbone (HCB) distributed system of systems (SoS) and the HCB component functional capabilities, interfaces, and supporting elements. Funds will also be applied to the planning and execution of JALN-M demonstration scheduled in FY18.</p> <p>FY 2017 Base Plans: FY17 efforts include delivery of the HCB terminals, completing development of Pod, MGEP, ship terminal, and continuing subsystem integration and test.</p> <p>Continue efforts that will include development associated with Increment 2, to include, airborne terminal research and development of High Capacity Backbone (HCB) and air-to-air relay activities in an Anti- Access/Area Denial (A2/AD) environment. Participate in integration and testing of JALN-M Pod components or sub-systems. Support planning and execution of the JALN-M flight tests.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	14.247	27.093	29.384	0.000	29.384

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN, 2950: <i>Network Tactical Common Data Link (CDL)</i>	0.000	0.000	0.000	-	0.000	0.000	21.384	20.279	21.193	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

Funding was realigned in FY 18 from OPN and OMN to this budget to align with development schedule requirements for NTCDL.

D. Acquisition Strategy

NTCDL will utilize the evolutionary acquisition approach for: surface, air, sub-surface, man-portable.

E. Performance Metrics

Conformance to meet Joint Interoperability Test Command (JTIC) Certification requirements for CDL waveforms.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTCDL Product Development	C/CPFI	UNKNOWN : UNKNOWN	0.000	0.000		9.744	Aug 2016	6.289	Nov 2016	-		6.289	0.000	16.033	-
NTCDL HCB Development	WR	SPAWARSYSCTR : San Diego, CA	0.000	1.200	Sep 2015	2.003	Nov 2015	2.190	Nov 2016	-		2.190	0.000	5.393	-
NTCDL HCB Development	C/CPFF	MIT/Lincoln Lab : Lexington, MA	0.000	4.000	Apr 2015	6.285	Nov 2015	11.829	Nov 2016	-		11.829	0.000	22.114	-
NTCDL HCB Development	C/CPFF	DTIC : Fort Belvoir, VA	0.000	0.000		2.104	Oct 2015	0.000		-		0.000	0.000	2.104	-
NTCDL Software Development	WR	SPAWARSYS : San Diego, CA	0.000	0.000		1.415	Nov 2015	1.659	Nov 2016	-		1.659	0.000	3.074	-
Subtotal			0.000	5.200		21.551		21.967		-		21.967	0.000	48.718	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTCDL Systems Engineering	WR	SPAWARSYSCTR : San Diego, CA	5.601	6.180	Oct 2014	1.384	Oct 2015	1.240	Oct 2016	-		1.240	0.000	14.405	-
NTCDL Systems Engineering	C/IDIQ	SPAWARSYS : San Diego, CA	5.125	1.367	Sep 2015	2.494	Nov 2015	2.604	Nov 2016	-		2.604	0.000	11.590	-
Subtotal			10.726	7.547		3.878		3.844		-		3.844	0.000	25.995	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTCDL Test and Evaluation	WR	SPAWARSYSCTR : San Diego, CA	3.267	0.000		0.898	Oct 2015	1.729	Oct 2016	-		1.729	0.000	5.894	-
NTCDL Test and Review	MIPR	JITC : Fort Huachuca, AZ	0.200	0.000		0.299	Dec 2015	0.576	Dec 2016	-		0.576	0.000	1.075	-
NTCDL Waveform certification	MIPR	COMOPTEVFOR : Norfolk, VA	0.200	0.000		0.060	Dec 2015	0.115	Dec 2016	-		0.115	0.000	0.375	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>
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NTCDL Schedule

Fiscal Year	2015				2016				2017				2018				2019				2020				2021				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Major Reviews Milestones			◆ Dev RFP	DR		◆ MS B			◆ IBR	◆ PDR		◆ CDR						◆ MSC						◆ FRP DR	◆ IOC				
Documents			◆ ACQ DOC			◆ ACQ DOC								◆ CPD		◆ ACQ DOC							◆ TEMP		◆ ACQ DOC				
Contract				◆ RFP					◆ Contract Award							◆ EDMs Delivery (2)		◆ LRIP 1 Order				◆ LRIP 2 Order	◆ LRIP 1 Delivery			◆ FRP Order	◆ LRIP 2 Delivery		
Testing															◆ 1 st Article Test	◆ DT	◆ OA						◆ IOTE						
Installation																◆ DT/OA Install					◆ LRIP 1 Install							◆ LRIP 2 Install	
HCB	Studies and Design				Pod, MGEP Ship Terminal Production								Flight Testing				Subsystem Integration & Test												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205604N / <i>Tactical Data Links</i>	Project (Number/Name) 3341 / <i>Network Tactical Common Data Link</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3341				
JALN HCB Studies and Design	1	2015	1	2016
NTCDL - Development Request for Proposal Decision Review (Dev RFP DR)	3	2015	3	2015
JALN HCB Integrated Testing	4	2015	4	2017
NTCDL - Milestone B	2	2016	2	2016
NTCDL - Contract Award	4	2016	4	2016
NTCDL - Development Contract	4	2016	4	2018
NTCDL - Preliminary Design Review (PDR)	2	2017	2	2017
NTCDL - Critical Design Review (CDR)	4	2017	4	2017
JALN HCB Development	2	2015	3	2017
NTCDL - Capability Production Document (CPD)	3	2018	3	2018
JALN HCB Flight Testing	4	2017	3	2018
NTCDL - First Article Test	4	2018	4	2018
NTCDL - Development Testing (DT)	4	2018	4	2018
NTCDL - Operational Assessment (OA)	1	2019	1	2019
NTCDL - Milestone C	2	2019	2	2019
NTCDL - Low Rate Initial Production (LRIP) Order	2	2019	2	2019
NTCDL - Full-Rate Production Decision Review (FRP DR)	4	2020	4	2020
NTCDL - Initial Operational Capability (IOC)	4	2020	4	2020
NTCDL - Initial Operational Test and Evaluation (IOT&E)	3	2020	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	190.712	25.567	24.435	24.583	-	24.583	25.352	25.725	26.303	25.878	Continuing	Continuing
1916: <i>Surface ASW System Improvement</i>	190.712	25.567	24.435	24.583	-	24.583	25.352	25.725	26.303	25.878	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Navy's Strategy is to remain the preeminent maritime power, providing the U.S. a global expeditionary force committed to security and prosperity, while defending the Nation's interests. Within this vision, Anti-Submarine Warfare (ASW) remains a Navy core competency in a dynamic and uncertain maritime environment. U.S. adversaries continue to develop asymmetric capabilities and capacities to deter, disrupt, or delay the entry of U.S. and allied naval forces, and pose a constant challenge as we implement the Maritime Strategy. Evolving submarine technologies offer enhanced stealth, speed, endurance, weapons, and operational proficiency, trends foretelling that the adversary submarine of the future will have a significantly larger sphere of influence, while presenting less vulnerability to ASW forces. The effective offensive engagement range of the adversary submarine of the future will continue to match or outrange individual U.S. and multinational platform sensors and weapons in many tactical environments. Submarines are an increasing threat to all Naval and Allied ships, particularly modern diesel subs and faster torpedoes. Not only can the presence of potential hostile submarines delay naval combatant action until they are located and neutralized, submarines can also disrupt all seaborne logistics supply for any ground campaign as well as maritime commerce. ASW forces must be effective in all operating environments, ranging from the deep open ocean to the littorals, and are key to countering adversarial anti-access and area denial strategies.

The objective of this Program Element (PE) is to significantly improve existing Surface Ship Undersea Warfare (USW) sonar system capabilities through quick and affordable development/integration of emergent, transformational technologies in support of Littoral ASW, Theater ASW (TASW), Mine Reconnaissance, and overall Sea Shield efforts required to pace the threat. Detection and classification play uniquely vital roles in the success of any ASW campaign. To be effective against increasingly stealthy threats in an often ambiguous undersea environment, future sensors must be environmentally adaptive, have very low false alarm rates, and exploit the full range of current and future submarine detection vulnerabilities.

Project 1916's primary mission is to improve AN/SQQ-89(V) Measures Of Performance (MOP) by enhancing passive and active detection, tracking, classification and localization, and torpedo Detection, Classification, and Localization (DCL), sonobuoy data processing and display capabilities, and increasing acoustic sensor frequency bandwidth (Operational Requirements Document #667-76-05 titled 'AN/SQQ-89 Improvement Program', Test and Evaluation Master Plan 802-2 (TEMP 802-2)). Improvements to system simulation, stimulation, Information Assurance (IA), software and network architectures, and safety are included. This project takes advantage of the AN/SQQ-89(V) Open System Architecture (OSA) and Acoustic Rapid Commercial-Off-The-Shelf (COTS) Insertion (ARCI) initiatives to integrate torpedo DCL and ASW sonar combat system capability improvements. This COTS-based Surface Ship ASW combat system, the AN/SQQ-89A(V)15, is currently planned as a backfit program for both CG47 (select CG59-73 Baseline 3 and 4 ships) and DDG51 (All DDG and follow FLT I/II/IIA) class ships. The Open Architecture (OA) (level 3 compliant) of the AN/SQQ-89A(V)15 system drives the Advanced Capability Build (ACB) spiral development process and provides budget flexibility to make COTS/OA technology solutions and ARCI-type initiatives affordable. This will be accomplished via the incorporation of select Pre-Planned Product Improvements (P3I) and emergent, transformational ASW technologies delivered to the AN/SQQ-89(V) prime integrator every two years. This program will participate in, and take advantage of, the Tactical Advancements for the Next Generation (TANG) initiative that utilizes Commercial Industrial Design Thinking methodologies to engage the Fleet in

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>
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generating innovative ASW improvement concepts. ASW technology implementation will take advantage of improvements developed under the submarine Advanced Processing Build (APB) and Advanced Surveillance Build (ASB) programs and will in turn share unique improvements developed under this program with the submarine and surveillance ASW communities. Beginning in FY 2015, all three programs (ACB, ASB, and APB) are managed under a common development organization and process entitled AxB. While each platform retains its uniqueness and focus in functional domains essential to mission success, a premium is placed on development of common capabilities and modular architecture technologies to maximize commonality and cost effectiveness. This project will also contribute to the development of Littoral Combat Ship (LCS) ASW Mission Packages and the Fast Frigate Program.

Project 1916 also includes funding for the Surface Ship Engineering Measurement Program (SSEMP), which will measure the performance of existing and new Surface Ship ASW combat systems and enables data-based assessment of the capabilities and shortfalls in the performance of these systems in realistic scenarios.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	26.366	24.460	26.409	-	26.409
Current President's Budget	25.567	24.435	24.583	-	24.583
Total Adjustments	-0.799	-0.025	-1.826	-	-1.826
• Congressional General Reductions	-	-0.025			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.799	0.000			
• Program Adjustments	0.000	0.000	-1.475	-	-1.475
• Rate/Misc Adjustments	0.000	0.000	-0.351	-	-0.351

Change Summary Explanation

The FY 2017 funding request was reduced by \$0.435M to account for the availability of prior year execution balances.

Decrease in Surface ASW Combat Systems Integration by \$1.04M was required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>				Project (Number/Name) 1916 / <i>Surface ASW System Improvement</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1916: <i>Surface ASW System Improvement</i>	190.712	25.567	24.435	24.583	-	24.583	25.352	25.725	26.303	25.878	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Surface ASW Systems Improvements Project will support essential performance enhancements to AN/SQQ-89(V) and Surface Ship Sonar Systems. This project will improve AN/SQQ-89(V) MOP by enhancing operator interface methods and tools, active and passive detection, tracking, classification and localization, torpedo DCL, and sonobuoy data processing and display capabilities, and increasing acoustic sensor frequency bandwidth (Operational Requirements Document #667-76-05 titled 'AN/SQQ-89 Improvement Program'), TEMP 802-2.

This project will take advantage of the TANG initiative, AN/SQQ-89(V) OSA, and ARCI initiatives to integrate a TDCL and ASW sonar and combat system capability improvements. This COTS-based Surface Ship ASW combat system, the AN/SQQ-89A(V)15, is currently planned as a backfit program for both CG47 (select CG59-73 Baseline 3 and 4 ships) and DDG51 (All DDG51 and follow FLT I/II/IIA) class ships. This project has delivered the AN/SQQ-89A(V)15 Pre-Production Prototype, performed installation on board CG73, and conducted subsequent Developmental Test & Evaluation (DT&E) and Initial Operational Test & Evaluation (IOT&E) where the system was found 'Operationally Effective' by Command Operational Test and Evaluation Force (COMOPTEVFOR).

The OSA and high performance COTS processing hardware on ships fielded with the AN/SQQ-89A(V)15 combat system provides an opportunity to integrate select P3I as well as emergent, transformational ASW technological improvements that were previously unachievable. The Undersea Warfare (USW) suites on these ships will require periodic upgrades to remain effective well into the 21st century and to pace the threat. Software upgrades target capability increases in high interest areas as prescribed by the Fleet and captured in campaign analysis. To achieve this, this project will package and deliver incremental upgrades every two years to the AN/SQQ-89A(V)15 production program via an ACB spiral development process (ACB-13, ACB-15, etc.) by inserting maturing USW technologies, such as enhancements to improve USW performance in the littoral, operator efficiency upgrades via the implementation of robust embedded data record and replay capability and active/passive sonar simulation/stimulation, DCL active/passive processing upgrades, passive sonar automated detection and classification processing bell-ringers from the ASW Community-of-Interest, detect and track through maneuvers, integration of MH-60R mission systems with the AN/SQQ-89A(V)15 combat system, integration of Mid-Frequency active detection improvements, false-alarm rate reduction, clutter reduction, integration of ASW Community-of-Interest improved acoustic intercept and small-object avoidance, ASW Multi-Sensor integration (acoustic similar-source fusion and implementation of integrated shipboard system data, and ASW combat display architecture), distributed engagement management (Network Centric Enterprise Services implementation, new displays and decision aids, ASW Community-of-Interest model capabilities implementation), Mid-Frequency Acoustic Communications (MF ACOMMS) between Surface Combatants and Submarines, and upgraded technologies such as algorithm improvements, increased Passive Narrow Band (PNB) frequency, Continuous Active Sonar (CAS), Surface ASW Synthetic Trainer (SAST), and beamformer improvements. A rigorous testing program is also required to ensure that these performance enhancements are operationally effective and suitable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SQQ-89A(V)15 Surface Ship ASW Advanced Capability Build (ACB) Development	21.667	20.535	20.683	0.000	20.683
Articles:	-	-	-	-	-
<p>Description: Develop enhancements to the AN/SQQ-89A(V)15 Open System Architecture (OSA) via the integration of transformational technologies through the four step ACB spiral development process enhanced by the TANG initiative. Items include hull-mounted Acoustic Intercept (ACI) sensor, ACI performance predictions and signal injection capabilities, hull array adaptive beamformer and towed array shape compensated beamformer improvements via the Beamformer Functional Segment (BFFS), Mid-Frequency Active (MFA) Cooperative Organic Mine Defense (COMID) mine avoidance upgrades, MFA rapid replay and multi-waveform tracker, Hull Passive Processing Functional Segment (HPPFS) improvements, Sensor Performance Prediction Functional Segment (SPPFS) improvements, Undersea Warfare Control Functional Segment (UCFS) improvements, Supportability Functional Segment (SupFS)/SAST improvements, Recording Functional Segment (RecFS) improvements, Common System Services/Mission Package Services (CSS/MPS) improvements, full bandwidth towed array passive ASW and automated torpedo DCL algorithm improvements (active/passive) within the Torpedo Recognition and Alertment Functional Segment (TRAFS)/Torpedo Defense Functional Segment (TDFS) necessary to extend detection ranges and reduce false alert/alarm rates, new Undersea Situational Awareness Workstation (USAW) sensor to reduce the number of displays required for system operation, Mid-Frequency Acoustic Communications (MF ACOMMS) development, integration of MH-60R mission systems with the AN/SQQ-89A(V)15 combat system, simplification of displays and active processing, and a Sonar Logger capability to significantly reduce operator data logging requirements. These items will be integrated and delivered to the CG47 and DDG51 class AN/SQQ-89A(V)15 backfit production programs via ACB updates. Import advanced development capabilities from the submarine APB and ARCI projects. Export advanced capabilities to submarine and surveillance combat system programs.</p> <p>Resolve/troubleshoot issues/deficiencies that arise from the AN/SQQ-89(V) Surface Ship ASW Test & Evaluation program. Rapidly address and correct problems/deficiencies in processing, capability or operations within the following areas within the AN/SQQ-89(V) USW combat system architecture; sensor processing, acoustics, fire control, contact management, performance prediction, operator productivity and on-board training, MFTA, Digital Fire Control Interface (DFCI), MFA processing, and adaptive beamforming.</p> <p>FY 2015 Accomplishments: Completed Aegis Integration Event (AIE) certification and transition of AN/SQQ-89A(V)15 ACB-13. Continued development and integration of enhancements to the AN/SQQ-89A(V)15 for ACB-15. Finished the conduct</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>of independent Step 2 testing of ACB-15 individual technologies. Individual capabilities which meet Step 2 requirements will be integrated into tactical hardware. Prepared data collection and test plans for Step 3 land-based testing. Step 3 includes a peer review by Subject Matter Experts (SME) of fully integrated tactical capability. Initiated planning for ACB-17.</p> <p>FY 2016 Plans: Continue development and integration of enhancements to the AN/SQQ-89A(V)15 for ACB-15. Priority candidates will continue to be assessed during the ACB Step process. Conduct Step 3 land-based testing of full tactical system which will test individual capability and system performance of ACB-15. Conduct System Qualification Test (SQT) and AIE for ACB-15. Initiate development of concepts and capabilities for ACB-17.</p> <p>FY 2017 Base Plans: Transition ACB-15 to production. Continue development and integration of enhancements to the AN/SQQ-89A(V)15 for ACB-17. Priority candidates will continue to be assessed during the ACB Step process. Conduct Step 1 assessment and Step 2 independent testing of ACB-17 candidate technologies. Initiate system integration and Step 3 land-based testing.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: AN/SQQ-89(V) Surface Ship ASW Test & Evaluation Program</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Supported two 3Q15 IOT&E events including ship groom, crew training, and data analysis. Continued to plan for two additional IOT&E events in 4Q15. Updated TEMP 802-2 to cover ACB-13 DT/OT requirement. Coordinate deliveries and installations of TI 14 Hardware Suites to two Aegis Test Sites (CSEDS and SCSC) starting 4Q15.</p> <p>FY 2016 Plans: Finalize test ship and resources in support of ACB-13 DTs. Finalize ACB-13 TEMP for signature.</p> <p>FY 2017 Base Plans:</p>	0.700	0.700	0.700	0.000	0.700
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Finalize test ship and resources in support ACB-13 OT. FY 2017 OCO Plans: N/A					
Title: Surface Ship Enhanced Measurement Program (SSEMP) Articles:	3.200	3.200	3.200	0.000	3.200
Description: Analyze the sonar employment in the operational setting and report results for improvement of training/employment guidance. Perform Fleet exercise data reconstruction and post-test analysis each year. Conduct selected at-sea data collection activities by providing planning support, ship riders, and analyst support. Evaluate prototype sonar employment tactics, sonar processing and automation algorithms, and communication protocols for the detection, classification, tracking, and intra-Fleet hand-off to Fleet ASW assets, and provide summary reports to document results. FY 2015 Accomplishments: Conducted data collection and analysis of ACB-11 IOT&E/OT events for COTF. Continued analysis of SSEMP cases including CAS and real-world performance of ACB-11. FY 2016 Plans: Commence ACB-11/ACB-13 Level 4 Operator Test. Support analysis of ACB-13/ACB-15 ROI test. Continue analysis of SSEMP cases. Update lab hardware to support ACB-13 install on TI-14 hardware. FY 2017 Base Plans: Complete ACB-11/ACB-13 Level 4 Operator Test analysis. Support ACB-13 IOT&E/OT data collection and analysis of operational performance. Continue analysis of SSEMP cases. FY 2017 OCO Plans: N/A	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	25.567	24.435	24.583	0.000	24.583

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/2136: AN/SQQ-89 <i>Surface ASW Combat System</i>	78.802	103.241	90.029	-	90.029	115.096	137.643	134.047	136.740	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/0900: <i>DDG Modernization</i>	324.219	421.195	367.766	-	367.766	636.893	585.026	585.003	658.303	4,517.590	9,611.783

Remarks

D. Acquisition Strategy

- Via an ACB spiral development process, incorporate evolutionary and transformational technologies into AN/SQQ-89A(V)15 production systems.
- Utilize the Small Business Innovative Research (SBIR) program and full and open competition for new and improved innovative capability development.

E. Performance Metrics

- Deliver incremental capability increases in high interest areas, as prescribed by the Fleet and captured in campaign analysis, every two years to the AN/SQQ-89A(V)15 production program via an ACB spiral development process (ACB-09, ACB-11, ACB-13, etc.) by inserting maturing USW technologies.
- Conduct system qualification testing (SQT) and AEGIS Integration Events (AIE) for all fielded variants of ACB.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0205620N / Surface ASW Cmbt Sys Integr				Project (Number/Name) 1916 / Surface ASW System Improvement							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SQQ-89 S/W Development/Integration	C/CPFF	AAC : NY	6.038	0.200	Jan 2015	0.267	Feb 2016	0.000		-		0.000	0.000	6.505	-
SQQ-89 S/W Development/Integration	C/CPFF	ALION : IL	4.423	1.240	Jan 2015	1.250	Nov 2015	1.250	Dec 2016	-		1.250	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	AM : VA	14.572	0.103	Jan 2015	0.150	Dec 2015	0.150	Dec 2016	-		0.150	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	GD-AIS : VA	11.322	0.000		0.000		0.000		-		0.000	0.000	11.322	-
SQQ-89 S/W Development/Integration	C/CPFF	In-Depth Engineering : VA	2.975	0.000		0.000		0.000		-		0.000	0.000	2.975	-
SQQ-89 S/W Development/Integration	C/CPFF	JHU/APL : MD	22.311	5.249	Dec 2014	4.317	Dec 2015	4.317	Dec 2016	-		4.317	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	METRON : VA	2.450	1.400	Jan 2015	1.100	Dec 2015	1.100	Dec 2016	-		1.100	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	Lockheed Martin : NY	10.205	0.000		0.000		0.000		-		0.000	0.000	10.205	-
SQQ-89 S/W Development/Integration	C/CPFF	Lockheed Martin : VA	9.953	2.950	Dec 2014	3.152	Feb 2016	3.152	Dec 2016	-		3.152	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	WR	NSWC/Carderock : MD	7.527	0.000		0.000		0.000		-		0.000	0.000	7.527	-
SQQ-89 S/W Development/Integration	WR	NSWC/Dahlgren : VA	1.440	0.000		0.000		0.000		-		0.000	0.000	1.440	-
SQQ-89 S/W TDA Support	WR	NUWC/Newport : RI	9.062	2.308	Nov 2014	2.300	Nov 2015	2.299	Nov 2016	-		2.299	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	SEDNA : VA	4.300	0.000		0.000		0.000		-		0.000	0.000	4.300	-
SQQ-89 S/W Development/Integration	C/CPFF	UT/ARL : TX	11.337	2.715	Jan 2015	2.641	Dec 2015	2.641	Dec 2016	-		2.641	Continuing	Continuing	Continuing
SQQ-89 S/W Development/Integration	C/CPFF	VAR : VAR*	17.302	3.693	Dec 2014	3.550	Dec 2015	3.966	Dec 2016	-		3.966	Continuing	Continuing	Continuing
SAST Development/Integration	C/CPFF	JHU/APL : MD	8.302	0.000		0.000		0.000		-		0.000	0.000	8.302	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>	Project (Number/Name) 1916 / <i>Surface ASW System Improvement</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SAST Development/Integration	WR	NSWC/Carderock : MD	11.265	1.114	Dec 2014	1.114	Nov 2015	1.114	Nov 2016	-		1.114	Continuing	Continuing	Continuing
SAST Development/Integration	WR	NUWC/Newport : RI	2.950	0.065	Nov 2014	0.065	Nov 2015	0.065	Nov 2016	-		0.065	Continuing	Continuing	Continuing
SAST Development/Integration	C/CPFF	SEDNA : VA	4.792	0.105	Jan 2015	0.105	Feb 2016	0.105	Dec 2016	-		0.105	Continuing	Continuing	Continuing
SAST Development/Integration	C/CPFF	UT/ARL : TX	1.652	0.000		0.000		0.000		-		0.000	0.000	1.652	-
SAST Development/Integration	C/CPFF	VAR : VAR*	0.380	0.216	Mar 2015	0.216	Feb 2016	0.216	Dec 2016	-		0.216	Continuing	Continuing	Continuing
Subtotal			164.558	21.358		20.227		20.375		-		20.375	-	-	-

Remarks

*Consists of multiple performing activities with funding for each not greater than \$1M per year.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SSEMP ConductTest/Data Evaluation	C/CPFF	JHU/APL : MD	11.965	2.100	Dec 2014	2.100	Dec 2015	2.100	Dec 2016	-		2.100	Continuing	Continuing	Continuing
SSEMP Conduct/Test/Data Evaluation	WR	NUWC/Newport : RI	2.912	0.500	Nov 2014	0.500	Nov 2015	0.500	Nov 2016	-		0.500	Continuing	Continuing	Continuing
SSEMP Conduct/Test/Data Evaluation	C/CPFF	UT/ARL : TX	3.678	0.600	Jan 2015	0.600	Dec 2015	0.600	Dec 2016	-		0.600	Continuing	Continuing	Continuing
SQQ-89 IV&V/SAT/TEMP Assess./Update	WR	NUWC/Newport : RI	2.026	0.400	Nov 2014	0.400	Nov 2015	0.400	Nov 2016	-		0.400	Continuing	Continuing	Continuing
SQQ-89 DT/OT/Miscellaneous T&E	WR	VAR : VAR*	2.085	0.300	Dec 2014	0.300	Feb 2016	0.300	Dec 2016	-		0.300	Continuing	Continuing	Continuing
Subtotal			22.666	3.900		3.900		3.900		-		3.900	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>	Project (Number/Name) 1916 / <i>Surface ASW System Improvement</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
*Consists of multiple performing activities with funding for each not greater than \$1M per year.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	C/CPAF	BAE Systems : MD	2.749	0.250	Nov 2014	0.000		0.000		-		0.000	0.000	2.999	-
Program Management Support	C/CPIF	CGI Federal : VA	0.000	0.000		0.250	Dec 2015	0.250	Dec 2016	-		0.250	Continuing	Continuing	Continuing
Program Office Travel	Allot	NAVSEA PEO IWS5 : DC	0.739	0.059	Jan 2015	0.058	Jan 2016	0.058	Oct 2016	-		0.058	Continuing	Continuing	Continuing
Subtotal			3.488	0.309		0.308		0.308		-		0.308	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			190.712	25.567	24.435	24.583	-	24.583	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205620N / <i>Surface ASW Cmbt Sys Integr</i>	Project (Number/Name) 1916 / <i>Surface ASW System Improvement</i>
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Proj 1916	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-13)			AIE ▲	ACB-13 Delivery ▲																								
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-15)	ACB-15 Development - Certification								SQT ▲		AIE ▲		ACB 15 Delivery ▲															
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-17)	ACB-17 Development - Certification				ACB-17 Development - Certification				ACB-17 Development - Certification				ACB-17 Development - Certification															
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19)															SQT ▲		AIE ▲		ACB-17 Delivery ▲									
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19)													ACB-19 Development - Certification						SQT ▲		AIE ▲				ACB-19 Delivery ▲			
Surface Ship Enhanced Measurement Program (SSEMP)	SSEMP				SSEMP				SSEMP				SSEMP				SSEMP				SSEMP							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1916				
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-13): SQQ-89A(V)15 ACB-13 Aegis Integration Event (AIE)	3	2015	3	2015
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-13): SQQ-89A(V)15 ACB-13 Prdtn. S/W Delivery to Integrator	4	2015	4	2015
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-15): SQQ-89A(V)15 ACB-15 Dev./ Step Eval./PRT/Integ./Cert. (continued)	1	2015	2	2016
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-15): SQQ-89A(V)15 ACB-15 System Qualification Test (SQT)	2	2016	2	2016
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-15): SQQ-89A(V)15 ACB-15 Aegis Integration Event (AIE)	4	2016	4	2016
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-15): SQQ-89A(V)15 ACB-15 Prdtn. S/W Delivery to Integrator	2	2017	2	2017
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-17): SQQ-89A(V)15 ACB-17 Dev./ Step Eval./PRT/Integ./Cert.	3	2015	2	2018
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-17): SQQ-89A(V)15 ACB-17 System Qualification Test (SQT)	2	2018	2	2018
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-17): SQQ-89A(V)15 ACB-17 Aegis Integration Event (AIE)	4	2018	4	2018
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-17): SQQ-89A(V)15 ACB-17 Prdtn. S/W Delivery to Integrator	2	2019	2	2019
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19): SQQ-89A(V)15 ACB-19 Dev./ Step Eval./PRT/Integ./Cert.	3	2017	4	2019
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19): SQQ-89A(V)15 ACB-19 System Qualification Test (SQT)	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19): SQQ-89A(V)15 ACB-19 Aegis Integration Event (AIE)	4	2020	4	2020
AN/SQQ-89A(V)15 Advanced Capability Build (ACB-19): SQQ-89A(V)15 ACB-19 Prdtn. S/W Delivery to Integrator	2	2021	2	2021
Surface Ship Enhanced Measurement Program (SSEMP): Surface Ship Enhanced Measurement Program (SSEMP) (continued)	1	2015	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	227.220	25.920	47.703	39.134	-	39.134	68.563	96.303	90.596	113.178	Continuing	Continuing
0366: <i>MK 48 ADCAP</i>	227.220	25.920	42.203	39.134	-	39.134	68.563	96.303	90.596	113.178	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	0.000	5.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.500

A. Mission Description and Budget Item Justification

MK48 ADCAP (Advanced Capability) Research, Development, Test and Evaluation (RDT&E) program executes incremental development of weapon performance improvements in three development product areas: (1) Common Broadband Advanced Sonar System (CBASS), (2) Advanced Processor Builds (APBs), and (3) torpedo technology insertion. The budget enables Acquisition Category (ACAT) III development to address Chief of Naval Operations (CNO) defined capability-based requirements and mission needs. This program is tied to development programs that leverage a joint United States/Australia Armaments Cooperative Project (ACP) to develop MK48 ADCAP CBASS; and Future Naval Capability (FNC) technologies developed by the Office of Naval Research (ONR).

Countermeasure (CM) sophistication and availability on the open market directly affects ADCAP kill probability and its ability to counter rapidly evolving threats. The focus of the MK-48 ADCAP torpedo program from FY 2001 and out shifted from being primarily concentrated on software block upgrade efforts towards coordinated hardware upgrades, rapid Commercial-Off-the-Shelf (COTS) insertion, and APBs to rapidly upgrade the ADCAP to counter evolving threats and maintain robust performance. The CBASS program developed and fielded a broadband sonar capable of identifying CMs and discriminating them from the target. CBASS Phase I achieved IOC in FY 2006 and Phase II was achieved in 2013. The Commonwealth of Australia Royal Navy (RAN) is jointly participating to develop CBASS APB5 to improve shallow water performance under a signed Memorandum of Agreement (MOA) extension November 2009. The MOA extension expires Nov 2019.

The MK48 ADCAP torpedo program focuses on two specific areas near term; torpedo APBs and hardware tech insertions. The CNO continues to stress shallow water (less than 600 feet) as a critical operating area to counter third world diesel electric submarines. Torpedo testing in shallow water has demonstrated that in-service ADCAP has less than full capability in this difficult environment. However, this testing, in conjunction with laboratory simulation efforts, has shown that significant performance improvements can be made by implementing changes to weapon tactics and software algorithms. Development, implementation, and testing of these changes is being accomplished under the torpedo APB program. The APB program also leverages the RAN joint torpedo program and FNC technologies developed by the ONR in the areas of torpedo broadband signal processing, tactics processing, and alertment. The torpedo tech insertion program will leverage the MK54 Lightweight Torpedo (LWT) algorithms. Further hardware investment involves development of Guidance & Control (G&C) replacement required to support ordinance requirements and development of Automated Test Equipment (ATE) replacement to improve comprehensive system testing of full up CBASS torpedoes.

The torpedo technology insertion program will provide for evolutionary torpedo improvements and upgrades (including the transition and testing of advanced technologies from the Science and Technology community). This approach will incorporate developmental testing of the FNC transitioning technologies for ADCAP upgrades in the areas of torpedo sensors, weapon/platform connectivity, warhead lethality, speed and endurance. These efforts will continue torpedo development investment at a lower cost and shorter term than traditional torpedo programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP
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APB5 software upgrades are currently in process for MK-48 ADCAP torpedoes.

Both FNC technologies and MK-54 LWT developments will be transitioned into ADCAP through APBs and technology insertion packages. Priorities for APBs and technology insertion are: (1) improved torpedo effectiveness through advanced processing algorithms, (2) advanced counter-countermeasure capability, and (3) a new array to improve torpedo effectiveness.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	25.952	42.206	38.351	-	38.351
Current President's Budget	25.920	47.703	39.134	-	39.134
Total Adjustments	-0.032	5.497	0.783	-	0.783
• Congressional General Reductions	-	-0.003			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.032	0.000			
• Program Adjustments	0.000	0.000	3.624	-	3.624
• Rate/Misc Adjustments	0.000	0.000	-2.841	-	-2.841

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *Upgrade Program*

	FY 2015	FY 2016
Congressional Add Subtotals for Project: 9999	0.000	5.500
Congressional Add Totals for all Projects	0.000	5.500

Change Summary Explanation

Decrease in MK-48 ADCAP by \$1.679M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

FY17: Additional funds added to accelerate improvements to the MK48 Fuze into APB 5 and upgrade Environmental Centric Weapons Analysis Facility.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 0366 / MK 48 ADCAP			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0366: MK 48 ADCAP	227.220	25.920	42.203	39.134	-	39.134	68.563	96.303	90.596	113.178	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MK48 ADCAP program executes incremental development of weapon performance improvements in two development product areas: (1) APBs, and (2) torpedo technology insertion. The budget enables ACAT III development to address CNO defined capability-based requirements and mission needs. This program is tied to development programs that leverage a joint United States/Australia ACP to develop MK48 ADCAP; and FNC technologies being developed by the ONR.

APB software upgrades will improve torpedo performance in challenging shallow water and countered environments through incorporation of new algorithms designed to address broadband, multiband, classifications and tactics processing changes. Hardware technology insertions will improve weapon performance against slow/low doppler targets. It provides improved target detection at long and short ranges and improved counter measure rejection in countered and shallow water scenarios. Availability will be improved through development of a G&C replacement and an ATE replacement.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: TORPEDO APB	11.057	24.573	26.711	0.000	26.711
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continued APB 5 development. Continued development of Automated Test Equipment (ATE) replacement.					
FY 2016 Plans: Continue APB 5 development. Start APB 6 development. Start transition of Fuze and ASuW FNC products to include requirement documentation to be completed, model updates, software integration, in-water and land-based testing, and performance matrix testing.					
FY 2017 Base Plans: Continue APB 6 development. Award TI-1 (112 Element Array) Development Contract					
FY 2017 OCO Plans: N/A					
Title: TEST & EVALUATION	14.863	17.630	12.423	0.000	12.423
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Conducted 2 APB 5 in-water engineering events, with 16 firings over 5 days, and follow-on analysis and reports. Conducted 2 Demos (GPS Coms and Long Range Propulsion).</p> <p><i>FY 2016 Plans:</i> Start APB 5 Developmental Testing (DT); 4 major DT events with 73 firings over ~14 days at sea as well as follow-on analysis and reports for each event. Continue Build-Test-Build development.</p> <p><i>FY 2017 Base Plans:</i> Conduct APB 5 testing (DT).</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	25.920	42.203	39.134	0.000	39.134

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• WPN/3225: MK-48 Torpedo ADCAP Mods	40.863	56.730	46.139	-	46.139	38.630	40.389	41.163	58.488	267.718	1,632.248
• WPN/3117: MK-48 Torpedo	2.153	60.438	44.537	-	44.537	46.979	72.906	98.093	171.534	Continuing	Continuing

Remarks

D. Acquisition Strategy

Sole source production contract awarded in FY 2004 for MK48 ADCAP MODS, MK-54 LWT, and CBASS kits, including RAN units. A full and competitive procurement for MK48 Mod 7 CBASS production kits was awarded in March 2011 with a FY 2010/2011 base year and four option years for FY 2012-2015. A new FY16 competitive contract will be awarded to continue procurement of CBASS Kits.

A new FY16 competitive contract will be awarded to procure additional warshot torpedoes.

E. Performance Metrics

Milestone reviews.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP					Project (Number/Name) 0366 / MK 48 ADCAP				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Software Development - Spiral 4 / PY Development	WR	NUWC NPT : Newport RI	31.839	0.000		0.000		0.000		-		0.000	0.000	31.839	-
Primary Software Development - APB 5	WR	NUWC NPT : Newport RI	2.388	5.952	Oct 2014	13.129	Oct 2015	11.024	Oct 2016	-		11.024	Continuing	Continuing	Continuing
Primary Hardware Development - Spiral 4 / PY Development	WR	NUWC NPT : Newport RI	31.201	0.000		0.000		0.000		-		0.000	0.000	31.201	-
Primary Hardware Development - APB 5	WR	NUWC NPT : Newport RI	2.255	5.500	Oct 2014	7.125	Jan 2016	4.546	Oct 2016	-		4.546	Continuing	Continuing	Continuing
Primary Software Development - IM	WR	Indian Head : Indian Head	0.450	0.000	Oct 2014	0.450	Jan 2016	0.450	Oct 2016	-		0.450	Continuing	Continuing	Continuing
Hardware Development - TI-1	C/CPFF	New - TBD : TBD	0.000	0.000		0.000		6.176	Aug 2017	-		6.176	0.000	6.176	-
Subtotal			68.133	11.452		20.704		22.196		-		22.196	-	-	-

Remarks
Funds torpedo, modeling and simulation hardware and software development, including the engineering and project manager's costs. FY 17 increased funding provided for new TI-1 hardware development contract award.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	WR	NUWC NPT : Newport RI	19.899	3.353	Oct 2014	3.353	Oct 2015	3.983	Oct 2016	-		3.983	Continuing	Continuing	Continuing
Software Development	Various	Various : Not Specified	36.317	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	NUWC NPT : Newport RI	2.243	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering WCF	WR	NUWC NPT : Newport RI	17.750	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	Various	NUWC NPT : Newport RI	0.676	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			76.885	3.353		3.353		3.983		-		3.983	-	-	-

Remarks
Funds activity program support costs, post test and evaluation WAF analysis, and WAF facilities costs.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation - Spiral 4 / PY	WR	NUWC NPT : Newport RI	17.086	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation - APB 5	WR	NUWC NPT : Newport RI	0.932	2.986	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Testing - APB 5	WR	NUWC NPT : Newport RI	0.000	0.000		5.418	Oct 2015	3.183	Oct 2016	-		3.183	Continuing	Continuing	Continuing
Test & Evaluation	WR	Operational Test Force : Norfolk VA	8.820	0.450	Oct 2014	0.545	Jul 2016	0.900	Jul 2017	-		0.900	Continuing	Continuing	Continuing
Modeling & Simulation	WR	NUWC NPT : Newport RI	9.745	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Modeling & Simulation	C/CPFF	ARL / PSU : State College PA	9.530	1.584	Dec 2014	1.476	Apr 2016	1.522	Apr 2017	-		1.522	Continuing	Continuing	Continuing
Test & Evaluation - Spiral 4 / PY	WR	NUWC Keyport (KPT) : Keyport WA	29.437	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation - APB 5	WR	NUWC Keyport (KPT) : Keyport WA	1.609	5.548	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Testing - APB 5	WR	NUWC Keyport (KPT) : Keyport WA	0.000	0.000		10.190	Oct 2015	6.818	Oct 2016	-		6.818	Continuing	Continuing	Continuing
Subtotal			77.159	10.568		17.629		12.423		-		12.423	-	-	-

Remarks
Funds in-water run costs and personnel to support such events and modeling and simulation performance evaluation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	C/FFP	Alion Science : Mclean VA	3.936	0.454	Oct 2014	0.468	Jan 2016	0.482	Oct 2016	-		0.482	Continuing	Continuing	Continuing
Travel	WR	NAVSEA : Washington DC	1.107	0.093	Oct 2014	0.049	Oct 2015	0.050	Oct 2016	-		0.050	Continuing	Continuing	Continuing
Subtotal			5.043	0.547		0.517		0.532		-		0.532	-	-	-

Remarks
Funds program support, program travel, and OPTEVFOR travel.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	227.220	25.920	42.203	39.134	-	39.134	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0366				
APB 5 Development: APB 5 Development	1	2015	3	2017
APB 5 Development: APB 5 Developmental Test (DT)	2	2016	4	2017
APB 5 Development: APB 5 Operation Test (OT)	1	2018	4	2019
APB 5 Development: APB 5 IOC	2	2020	2	2020
APB 6 Software / TI-1 Hardware Development: APB 6 Development	1	2016	4	2021
Automated Test Equipment Production Restart Efforts: Automated Test Equipment Production Restart Efforts	1	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 9999 / Congressional Adds			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	0.000	5.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.500
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MK48 Heavyweight Torpedo APB5+ enhancements are required to address CCS/MK48 pre and post launch interface issues which limit crew full implementation of the weapon and provide numerous capability enhancements requested and endorsed by the STRG. APB5+ modernizes the torpedo-to-CCS interface, improves Pk, increases platform safety, provides platform data decoupling the CCS/MK48 operational software interdependence, and would enable torpedo operational software (OPSW) updates while deployed through the CCS. APB5+ also corrects numerous HARs and provides new CCS/MK48 interface protocol (Ethernet over DDL.) Specific mods include the interlaced telemetry, iFENCE, TMA updates, ballistics in payload, new waypoints. Secondary affect will be to improve overall CCS/MK48 program alignment and/or efficiency.

APB5+ will provide increased platform safety and will enable future payload-to-platform capabilities providing for full utilization of platform data to the weapon (as well as data from the weapon to the platform) with the cumulative effect of increasing Pk. APB5+ addresses safety HARs and modernizes the torpedo to weapon interface to enable more effective communications.

APB5+ requires a corresponding Combat Control System modification to capabilities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016
Congressional Add: Upgrade Program	0.000	5.500
FY 2015 Accomplishments: N/A		
FY 2016 Plans: Update Interface Design Specification Conduct Future Torpedo Studies Design Advanced Weapon Performance Models		
Congressional Adds Subtotals	0.000	5.500

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 9999 / Congressional Adds
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E. Performance Metrics

Milestone review

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 9999 / Congressional Adds
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 9999	
Updated Interface Design Specification	████████████████████
Future Torpedo Studies	██████████
Advanced Weapon Performance Model	████████████████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 9999 / Congressional Adds
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
Updated Interface Design Specification	2	2016	4	2017
Future Torpedo Studies	2	2016	4	2016
Advanced Weapon Performance Model	3	2016	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,153.725	83.082	106.255	120.861	-	120.861	134.664	124.196	123.592	125.890	Continuing	Continuing
0601: <i>Acft Handling & Service Equip</i>	27.557	1.675	2.606	2.631	-	2.631	2.706	2.769	2.827	2.726	Continuing	Continuing
0852: <i>Consolidated Auto Support System</i>	148.216	6.791	6.546	6.494	-	6.494	6.750	6.891	7.038	7.091	Continuing	Continuing
1041: <i>Acft Equip Repl/Maint Prog</i>	43.405	3.194	3.322	3.245	-	3.245	3.371	3.379	3.494	3.578	Continuing	Continuing
1355: <i>Propulsion and Power Component Improvement Program</i>	921.200	59.212	75.508	93.543	-	93.543	107.713	108.511	110.233	112.495	Continuing	Continuing
2269: <i>Expeditionary Airfield Improvements</i>	13.347	12.210	18.273	14.948	-	14.948	14.124	2.646	0.000	0.000	0.000	75.548

A. Mission Description and Budget Item Justification

Project 0601 - Common Ground Equipment is a Naval Aviation Project to apply new technology to common support equipment necessary to support multiple aircraft.

Project 0852 - Consolidated Automated Support System is a standardized Automated Test Equipment with computer assisted, multi-function capabilities to support the maintenance of aircraft subsystems and missiles.

Project 1041 - Aircraft Equipment Reliability/Maintainability Improvement Program is the only Navy program that provides engineering support for in-service out-of-production aircraft equipment, and provides increased readiness at reduced operational and support cost.

Project 1355 - Aircraft Engine Component Improvement Program develops reliability and maintainability and safety enhancements for in-service Navy aircraft engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, fuel systems, fuels, and lubricants.

Project 2269 - The Expeditionary Airfields (EAF) program designs, develops, tests and fields a sustainment lighting system to replace existing obsolete legacy EAF lighting system.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	85.037	117.759	126.325	-	126.325
Current President's Budget	83.082	106.255	120.861	-	120.861
Total Adjustments	-1.955	-11.504	-5.464	-	-5.464
• Congressional General Reductions	-	-0.004			
• Congressional Directed Reductions	-	-11.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.477	0.000			
• SBIR/STTR Transfer	-1.476	0.000			
• Program Adjustments	0.000	0.000	0.401	-	0.401
• Rate/Misc Adjustments	-0.002	0.000	-5.865	-	-5.865

Change Summary Explanation

The FY 2017 funding request was reduced by \$2.565M to account for the availability of prior year execution balances.

Cost:

Project 2269: Costs updated to reflect DON17 RDT&E,N Under Execution Review which re-phases the FY17 into FY19. FY16-21 costs updated as a result of an Integrated Baseline Review (IBR) in September 2015 and in FY17-21 to support NWCF Rate adjustments.

Schedule:

Project 0601: Aircraft Spotting Dolly schedule delayed due to funding being re-directed to a higher priority program within Project 0852. Milestone B shift from 3rd quarter FY15 to 1st quarter FY16 and Milestone C shift from 3rd quarter FY17 to 1st quarter FY18.

Project 0852: eCASS milestone Full Rate Production Decision Review and contract award for Full Rate Production shift from 4th Quarter FY 2016 to 3rd Quarter FY 2016.

Project 2269: SLS contract award occurred on 23 Dec 2014, however protest delayed start of the SLS contract period of performance to 25 March 2015. Schedule was shifted due to the Sustainment Lighting System (SLS) contract award protest. Schedule updated to support DON17 RDT&E,N Under Execution Review which re-phases funding from FY17 to FY19.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	
Technical: Not Applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 0601 / Acft Handling & Service Equip			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0601: <i>Acft Handling & Service Equip</i>	27.557	1.675	2.606	2.631	-	2.631	2.706	2.769	2.827	2.726	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common Ground Equipment is a Naval Aviation project to apply new technology to common support equipment necessary to support multiple systems/aircraft within the Navy. The common support equipment items developed with this budget are briefed to the Air Force, Army and Coast Guard for possible use in joint procurement in the production phase.

New Programs are Aircraft Spotting Dolly (ASD) and Carrier/Amphibious Assault Ship Crash Crane (CV/AACC) in FY15. ASD is an R&D program to develop next generation ASD. New ASD requires low profile and alternative power to allow safe spotting of all aircraft aboard carrier/amphibious class ships. CV/AACC is required to remove damaged aircraft from the flight line. R&D resources are needed to identify not only replacements, but new technologies, which can increase the reliability and maintainability of this flight ops critical piece of equipment.

Funding supports the evaluation, testing and integration to develop Portable Electronic Maintenance Aids (PEMA) Commercial Off the Shelf solution for portable device deployments across the Naval Aviation Enterprise. PEMA is a portable device utilized by maintainers with the implementation of digital maintenance capabilities (digital publications, Interactive Electronic Technical Manuals, Internet Protocol based data uploads, Binary digit data downloads, automated diagnostics, and planeside Naval Aviation Logistics Command/Management Information System. PEMAs are a mandatory display device supporting modern day Automated Maintenance Environment implemented for weapon systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Aircraft Spotting Dolly (ASD)	0.541	1.091	0.300	0.000	0.300
Articles:	-	1	1	-	1
Description: There are no commercially available towing vehicles that could even be modified to replace the capabilities of the present SD-2. An R & D effort will be required to design its replacement. Advances in batteries and alternating current motor drive systems in the past decade have made it feasible to design an electrically powered vehicle for the CV, CVN, and L-Class hanger deck spotting missions. Such a vehicle will be inherently more reliable, reduce maintenance, and eliminate the fumes and noise generated by a diesel engine. An electrically driven vehicle will provide much greater motion control for slow speeds to aid in the engagement to the aircraft nose gear. Proximity sensors will be incorporated to automatically stop the spotting dolly prior to accidental impact with the aircraft, other support equipment or bulkheads, increasing the safety of the spotting					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>operations. The legacy ASD is close to thirty years old and experiencing parts obsolescence issues and general efficiency degradation.</p> <p>FY 2015 Accomplishments: Coordinated requirements definition; performed market research and analysis of alternatives.</p> <p>FY 2016 Plans: Perform source selection, award prototype contract, and begin prototype phase.</p> <p>FY 2017 Base Plans: Perform government testing of prototype.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Carrier/Amphibious Assault Ship Crash Crane (CV/AACC)</p> <p align="right">Articles:</p> <p>Description: CV/AACC are required to remove damaged aircraft from the flight line. In 2004, a solicitation for a commercial off the shelf replacement for the existing shipboard crash crane was issued. Two bids were received, and after a complete evaluation with many rounds of discussions with the companies bidding, both proposals were found to be technically inadequate and the procurement effort was discontinued. As a result, the crash cranes have continued operation unchanged. Designed in the late 1980's, major systems are beginning to experience the obsolescence of spare parts and are in need of updating. R&D resources are needed to identify not only replacements, but new technologies, which can increase the reliability and maintainability of this flight ops critical piece of equipment. Systems updates would include the engine/generator and electrical updates to the motor drive/control system. An exploration of power sources other than diesel engines would be considered and a corrosion resistant boom.</p> <p>FY 2015 Accomplishments: Continued requirements definition, market research and analysis of alternatives.</p> <p>FY 2016 Plans: Prepare source selection documentation, prepare test plan documents and initiate source selection.</p> <p>FY 2017 Base Plans: Continue source selection documentation, continue test plan documents and continue source selection.</p> <p>FY 2017 OCO Plans:</p>	0.689	1.070	1.886	0.000	1.886
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Portable Electronic Maintenance Aid (PEMA) Articles: Description: Portable Electronic Maintenance Aid (PEMA) funding supports the evaluation, testing and integration to develop PEMA Commercial Off-the-Shelf (COTS) solution for portable device deployments across the Naval Aviation Enterprise. PEMA is a portable device utilized by maintainers with the implementation of digital maintenance capabilities (digital publications, Interactive Electronic Technical Manuals, Internet Protocol based data uploads, Binary digit data downloads, automated diagnostics, and planeside Naval Aviation Logistic Command Management Information System. PEMAs are a mandatory display device supporting modern day Automated Maintenance Environment implemented for weapon systems. FY 2015 Accomplishments: Evaluated, tested and integrated evolving COTS solutions. Conducted test & evaluation of Type/Model/Series (T/M/S) peculiar software/hardware requirements and network connectivity compliance across the Global Information Grid (GIG) prior to deployment to the fleet by a yearly release cycle. FY 2016 Plans: Evaluate, test and integrate evolving COTS solutions. Conduct test & evaluation of T/M/S peculiar software/hardware requirements and network connectivity compliance across the GIG prior to deployment to the fleet by a yearly release cycle. FY 2017 Base Plans: Evaluate, test and integrate evolving COTS solutions. Conduct test & evaluation of T/M/S peculiar software/hardware requirements and network connectivity compliance across the GIG prior to deployment to the fleet by a yearly release cycle. FY 2017 OCO Plans: N/A	0.445	0.445	0.445	0.000	0.445
Accomplishments/Planned Programs Subtotals	1.675	2.606	2.631	0.000	2.631

C. Other Program Funding Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Line Item • APN/0705: Ground Support Equipment	120.361	121.195	117.764	-	117.764	123.825	122.812	120.866	123.911	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/4268: Aviation Support Equipment	9.146	7.762	7.280	-	7.280	7.234	7.245	7.448	7.574	Continuing	Continuing

Remarks

D. Acquisition Strategy

Common Ground Equipment: This is a non ACAT program. Field activities propose tentative projects. Internal panel merits and selects projects. Field activities develop projects and submit results. Operational Advisory Group process selects projects to transition to procurement.

Portable Electronic Maintenance Aids: The management approach includes the Program Management Office residing at NAVAIR with Milestone Decision Authority delegated to the Naval Air Systems Command Chief Information Officer. The evolutionary development approach will be used to execute requirements. Contracting for the prime integrator will be via competitively awarded Indefinite Delivery/Indefinite Quantity contracts.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Dev-- ASD	C/FFP	TBD : TBD	0.000	0.000		0.441	Mar 2016	0.200	Jan 2017	-		0.200	0.000	0.641	0.641
Systems Engineering-ASD	WR	NAWCAD : LAKEHURST, NJ	0.000	0.322	Nov 2014	0.550	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering-CV/ AACC	WR	NAWCAD : LAKEHURST, NJ	0.059	0.572	Nov 2014	0.870	Nov 2015	1.886	Nov 2016	-		1.886	Continuing	Continuing	Continuing
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	17.517	0.000		0.000		0.000		-		0.000	0.000	17.517	-
Subtotal			17.576	0.894		1.861		2.086		-		2.086	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	8.857	0.000		0.000		0.000		-		0.000	0.000	8.857	-
Subtotal			8.857	0.000		0.000		0.000		-		0.000	0.000	8.857	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational T & E - PEMA	WR	NAWCAD : PAX RIVER, MD	0.624	0.168	Nov 2014	0.171	Nov 2015	0.170	Nov 2016	-		0.170	Continuing	Continuing	Continuing
Operational T & E - PEMA	WR	FRC SE : Jacksonville, FL	0.000	0.277	Nov 2014	0.274	Nov 2015	0.275	Nov 2016	-		0.275	0.000	0.826	-
C&G Test - ASD	WR	NAWCAD : PAX RIVER, MD	0.000	0.219	Nov 2014	0.100	Nov 2015	0.100	Nov 2016	-		0.100	Continuing	Continuing	Continuing
C&G Test - CV/AACC	WR	NAWCAD : PAX RIVER, MD	0.000	0.117	Nov 2014	0.200	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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AIRCRAFT SPOTTING DOLLY (ASD)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acquisition Milestones																																
Milestones																																
Systems Development																																
Hardware Development	Reqts Analysis Doc (RAD) Dev / PROTOTYPE PHASE																															
Test & Evaluation																																
Deliveries																																

2017DON - 0205633N - 0601

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 0601 / <i>Acft Handling & Service Equip</i>
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4Q	
F/R Test 12	
V/V Test 12	
Rel 12 ▼	

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 0601 / <i>Acft Handling & Service Equip</i>
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CARRIER/AMPHIBIOUS ASSAULT SHIP CRASH CRANE (CV/AACC)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021						
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q			
Acquisition Milestones																															
Milestones										MS B ▲																					
Systems Development																															
Hardware Development	Reqts Analysis Doc (RAD) Dev / PROTOTYPE PHASE																														
Test & Evaluation																															
C & G Test																															
Production Milestones																															

2017DOW - 0205633N - 0601

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0205633N / Aviation Improvements

Project (Number/Name)
0601 / Acft Handling & Service Equip

PORTABLE ELECTRONIC MAINTENANCE AIDS (PEMA)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021		
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q
Acquisition Milestones																											
Systems Development																											
Contract Award	6				7				8				9				10				11				12		
Requirements		Study 6				Study 7				Study 8				Study 9				Study 10				Study 11				Study 12	
Engineering Change Proposal By T/M/S			ECP 6			ECP 7				ECP 8				ECP 9				ECP 10				ECP 11				ECP 12	
Image Development By T/M/S			Image Devel 6			Image Devel 7				Image Devel 8				Image Devel 9				Image Devel 10				Image Devel 11				Image Devel 12	
Test & Evaluation																											
Functional Regression Testing				F/R Test 6				F/R Test 7				F/R Test 8				F/R Test 9				F/R Test 10				F/R Test 11			
Independent Validation & Verification Testing				V/V Test 6				V/V Test 7				V/V Test 8				V/V Test 9				V/V Test 10				V/V Test 11			
Production Milestones																											
Deliveries																											
Production Deliveries				Rel 6				Rel 7				Rel 8				Rel 9				Rel 10				Rel 11			

2017DOW - 0205633N - 0601

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIRCRAFT SPOTTING DOLLY (ASD)				
Acquisition Milestones: Milestones: ASD-MILESTONE B	1	2016	1	2016
Acquisition Milestones: Milestones: ASD-MILESTONE C	1	2018	1	2018
Systems Development: Hardware Development: ASD - Reqts Analysis Doc (RAD) Dev / PROTOTYPE PHASE	1	2015	4	2016
Test & Evaluation: ASD - CONTRACTOR AND GOVT RUN TESTING	1	2017	2	2017
CARRIER/AMPHIBIOUS ASSAULT SHIP CRASH CRANE (CV/AACC)				
Acquisition Milestones: Milestones: MILESTONE B	1	2017	1	2017
Acquisition Milestones: Milestones: MILESTONE C	4	2019	4	2019
Systems Development: Hardware Development: CV/AACC-Reqts Analysis Doc (RAD) Dev / PROTOTYPE PHASE	1	2015	3	2018
Test & Evaluation: CV/AACC-CONTRACTOR AND GOVT RUN TESTING	4	2018	3	2019
PORTABLE ELECTRONIC MAINTENANCE AIDS (PEMA)				
Systems Development: Contract Award: Contract Award 6	1	2015	1	2015
Systems Development: Contract Award: Contract Award 7	1	2016	1	2016
Systems Development: Contract Award: Contract Award 8	1	2017	1	2017
Systems Development: Contract Award: Contract Award 9	1	2018	1	2018
Systems Development: Contract Award: Contract Award 10	1	2019	1	2019
Systems Development: Contract Award: Contract Award 11	1	2020	1	2020
Systems Development: Contract Award: Contract Award 12	1	2021	1	2021
Systems Development: Requirements: Requirements Study Complete 6	2	2015	2	2015
Systems Development: Requirements: Requirements Study Complete 7	2	2016	2	2016
Systems Development: Requirements: Requirements Study Complete 8	2	2017	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: Requirements: Requirements Study Complete 9	2	2018	2	2018
Systems Development: Requirements: Requirements Study Complete 10	2	2019	2	2019
Systems Development: Requirements: Requirements Study Complete 11	2	2020	2	2020
Systems Development: Requirements: Requirements Study Complete 12	2	2021	2	2021
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 6	3	2015	3	2015
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 7	3	2016	3	2016
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 8	3	2017	3	2017
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 9	3	2018	3	2018
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 10	3	2019	3	2019
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 11	3	2020	3	2020
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 12	3	2021	3	2021
Systems Development: Image Development By T/M/S: Image Development By T/M/S 6	3	2015	3	2015
Systems Development: Image Development By T/M/S: Image Development By T/M/S 7	3	2016	3	2016
Systems Development: Image Development By T/M/S: Image Development By T/M/S 8	3	2017	3	2017
Systems Development: Image Development By T/M/S: Image Development By T/M/S 9	3	2018	3	2018
Systems Development: Image Development By T/M/S: Image Development By T/M/S 10	3	2019	3	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: Image Development By T/M/S: Image Development By T/M/S 11	3	2020	3	2020
Systems Development: Image Development By T/M/S: Image Development By T/M/S 12	3	2021	3	2021
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 6	4	2015	4	2015
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 7	4	2016	4	2016
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 8	4	2017	4	2017
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 9	4	2018	4	2018
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 10	4	2019	4	2019
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 11	4	2020	4	2020
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 12	4	2021	4	2021
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 6	4	2015	4	2015
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 7	4	2016	4	2016
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 8	4	2017	4	2017
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 9	4	2018	4	2018
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 10	4	2019	4	2019
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 11	4	2020	4	2020
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 12	4	2021	4	2021
Deliveries: Production Deliveries: Production Delivery, Release 6	4	2015	4	2015
Deliveries: Production Deliveries: Production Delivery, Release 7	4	2016	4	2016
Deliveries: Production Deliveries: Production Delivery, Release 8	4	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0601 / Acft Handling & Service Equip
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Deliveries: Production Deliveries: Production Delivery, Release 9	4	2018	4	2018
Deliveries: Production Deliveries: Production Delivery, Release 10	4	2019	4	2019
Deliveries: Production Deliveries: Production Delivery, Release 11	4	2020	4	2020
Deliveries: Production Deliveries: Production Delivery, Release 12	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 0852 / Consolidated Auto Support System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0852: Consolidated Auto Support System	148.216	6.791	6.546	6.494	-	6.494	6.750	6.891	7.038	7.091	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The electronic Consolidated Automated Support System (eCASS) project is the system design and development of the latest generation of the US Navy's CASS family of automatic test systems. The legacy CASS system was designed and developed in the 1980's and commenced fielding in 1992. As such, it is reaching the end of its useful life due to obsolescence issues. eCASS is the replacement system for legacy CASS systems, which provides Naval aircraft avionics component maintenance and repair support at Intermediate and Depot maintenance facilities both shore-based and afloat. As a CASS replacement program, the eCASS program objectives remain the same as that of CASS. Specifically: (1) increase material readiness; (2) reduce life cycle costs; (3) improve tester sustainability at depot and intermediate maintenance levels; (4) reduce proliferation of unique test equipment, and (5) provide test capability for existing and emerging avionics/electronics aircraft weapon systems.

The Test Technology Development project involves analysis, application, maturation, integration and testing of emerging electronic, mechanical and optical test technologies for potential military utility in support of Naval avionics testing and repair. Specific technologies being developed include synthetic instruments, new Advanced Targeting Forward Looking Infrared electro-optics capabilities, multi-analog test capability to enable functional testing, and modernization elements for the CASS family of automatic test systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: eCASS Development	6.491	5.329	3.722	0.000	3.722
Articles:	-	-	-	-	-
Description: Develop, integrate and test an Automatic Test System (ATS) to replace legacy CASS systems. The new ATS will be compatible with and capable of hosting the hundreds of existing Test Programs that are currently utilized on legacy CASS at the Intermediate and Depot levels of maintenance, as well as any emerging Test Programs that may require greater test capability than provided by legacy CASS.					
FY 2015 Accomplishments: Continued test events.					
FY 2016 Plans: Continue test events.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0852 / Consolidated Auto Support System
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develop, integrate, prototype design changes to support Test Program Set (TPS) Migration for existing eCASS TPS candidates. Emphasis will be to develop and evaluate potential solutions to support development of future Engineering Change Proposals (ECPs).					
FY 2017 OCO Plans: N/A					
Title: Test Technology Development	0.300	1.217	2.772	0.000	2.772
Articles:	-	-	-	-	-
Description: Develops, integrates, and evolves enhanced test capabilities and technologies for insertion into the Consolidated Automated Support System (CASS) family of test systems. As weapon system electronics evolve, new test capabilities are required to support advanced systems. Existing test capabilities must be extended in range, accuracy, time and frequency domains in order to sustain the required test accuracy ratios for weapon systems support (the automatic test system must be four times as accurate as the asset being tested).					
FY 2015 Accomplishments: Continued to develop, integrate, and evolve enhanced test capabilities and technologies for insertion into the CASS family of test systems.					
FY 2016 Plans: Continue to develop, integrate, and evolve enhanced test capabilities and technologies for insertion into the CASS family of test systems. Emphasis will be placed on development and studies for the replacement of the CASS Electro-Optics console.					
FY 2017 Base Plans: Continue to develop, integrate, and evolve enhanced test capabilities and technologies for insertion into the CASS family of test systems with an increased focus on development and evaluation of potential solutions for the replacement of the CASS Electro-Optics console.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	6.791	6.546	6.494	0.000	6.494

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0852 / Consolidated Auto Support System
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN/0705: Consolidated Automated Support System	80.908	103.016	84.021	-	84.021	89.911	91.685	91.852	94.170	Continuing	Continuing

Remarks

D. Acquisition Strategy

Formal test technology reviews with industry are conducted annually (cooperative Joint Services initiative) to define maturity of needed technologies. Further studies are conducted as needed. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0852 / Consolidated Auto Support System
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hdw Dev eCASS	C/CPIF	Lockheed Martin : Orlando, FL	94.646	3.505	Oct 2014	3.400	Dec 2015	2.502	Dec 2016	-		2.502	0.000	104.053	104.053
Primary Hdw Dev Test Technology	C/CPFF	Various : Various	0.982	0.300	Jan 2015	1.166	Dec 2015	2.056	Dec 2016	-		2.056	4.504	9.008	9.008
Prior Year Prod Dev no longer funded in the FYDP	Various	Various : Various	28.397	0.000		0.000		0.000		-		0.000	0.000	28.397	-
Subtotal			124.025	3.805		4.566		4.558		-		4.558	4.504	141.458	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
eCASS Support	WR	Various : Various	3.039	1.242	Oct 2014	0.812	Dec 2015	0.582	Dec 2016	-		0.582	Continuing	Continuing	Continuing
eCASS Support	WR	NAWC AD : Lakehurst, NJ	5.689	1.680	Oct 2014	1.029	Dec 2015	0.554	Dec 2016	-		0.554	Continuing	Continuing	Continuing
Test Technology Support	WR	NAWC AD : Lakehurst, NJ	0.000	0.000		0.000		0.660	Dec 2016	-		0.660	0.000	0.660	-
Prior Year Support no longer funded in the FDYP	Various	Various : Various	12.853	0.000		0.000		0.000		-		0.000	0.000	12.853	-
Subtotal			21.581	2.922		1.841		1.796		-		1.796	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
eCASS Travel	WR	Various : Various	0.741	0.064	Nov 2014	0.088	Nov 2015	0.084	Nov 2016	-		0.084	Continuing	Continuing	Continuing
Test Tech Travel	WR	Various : Various	0.200	0.000		0.051	Nov 2015	0.056	Nov 2016	-		0.056	Continuing	Continuing	Continuing
Prior Year Mgmt no longer funded in the FYDP	Various	Various : Various	1.669	0.000		0.000		0.000		-		0.000	0.000	1.669	-
Subtotal			2.610	0.064		0.139		0.140		-		0.140	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 0852 / Consolidated Auto Support System
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electronic Consolidated Automated Support System (eCASS)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acquisition Milestones																																
Milestones							FRPDR ◆					IOC ▲																				
Systems Development	System Development																															
Hardware and Software Development	System Development																															
Test & Evaluation																																
Development Testing			DT-C1 Testing		DT-C2 Testing																											
Production Milestones																																
Contract Awards		LRIP 3 ●					FRP 1 ●				FRP 2 ●				FRP 3 ●					FRP 4 ●												
Deliveries																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 0852 / <i>Consolidated Auto Support System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>electronic Consolidated Automated Support System (eCASS)</i>				
Acquisition Milestones: Milestones: Full Rate Production Decision Review	3	2016	3	2016
Acquisition Milestones: Milestones: Initial Operating Capability	4	2017	4	2017
Systems Development: Hardware and Software Development: eCASS System Development	1	2015	4	2020
Test & Evaluation: Development Testing: eCASS DT-C1 Testing	3	2015	4	2015
Test & Evaluation: Development Testing: eCASS DT-C2 Testing	1	2016	3	2016
Production Milestones: Contract Awards: eCASS LRIP 3-APN	2	2015	2	2015
Production Milestones: Contract Awards: eCASS FRP 1-APN	3	2016	3	2016
Production Milestones: Contract Awards: eCASS FRP 2-APN	3	2017	3	2017
Production Milestones: Contract Awards: eCASS FRP 3-APN	3	2018	3	2018
Production Milestones: Contract Awards: eCASS FRP 4-APN	3	2019	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 1041 / Acft Equip Repl/Maint Prog			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1041: Acft Equip Repl/Maint Prog	43.405	3.194	3.322	3.245	-	3.245	3.371	3.379	3.494	3.578	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Aircraft Equipment Reliability/Maintainability Improvement Program (AERMIP) is the only Navy program which provides Research, Development, Test & Evaluation engineering support specifically for in-service, out-of-production aircraft equipment. AERMIP increases readiness through reliability, maintainability, and safety improvements to existing systems and equipment installed in Naval aircraft. It also provides a transition vehicle to deploy Total Ownership Cost reduction initiatives through flight-test support and Fleet Test & Evaluation. It meets affordable readiness objectives by providing a cost-effective solution to obsolescence problems encountered when service lives are extended. AERMIP promotes commonality and standardization across aircraft platform lines and among the services through extension of application and use of non-developmental items. AERMIP also decreases life cycle costs through reduced operational and support costs. AERMIP facilitates the Operational, Safety and Improvement Program by applying proven low-risk solutions to current fleet problems. AERMIP also funds high-priority flight testing which is not associated with any acquisition or development program under the Flight Test General task.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Avionics and Wiring	0.235	0.550	0.564	0.000	0.564
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Qualify additional material or pieces of equipment and the procedures or processes required for implementation. Test and evaluate equipment for effectiveness of wiring diagnostics and prognostics. Pursue technology advances in ultra-high density power storage from industry. Address avionics related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Begin to review and investigate high speed data connector reliability in aircraft subsystems.					
FY 2016 Plans: Test and evaluate equipment for effectiveness of wiring diagnostics and prognostics. Continue pursuit of technology advances in ultra-high density power storage from industry. Address avionics related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Qualify additional material or pieces of equipment and the procedures or processes required for implementation. Continue to review and investigate high speed data connector reliability in aircraft subsystems.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 1041 / Acft Equip Repl/Maint Prog
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Test and evaluate equipment for effectiveness of wiring diagnostics and prognostics. Address avionics related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Qualify additional material or pieces of equipment and the procedures or processes required for implementation.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Air Vehicle</p> <p align="right">Articles:</p>	2.115	1.858	2.071	0.000	2.071
<p>FY 2015 Accomplishments: Based on advancement in technology, test and qualify new materials or equipment and the procedures/process required for their implementation to improve operational reliability, while containing cost growth. Continue development of expanded methods of structural repair with focus on low cost and reduced labor procedures that can be done in fleet environments. Address rapid composite tooling and expansion of human factors focus through enhanced maintainer performance. Continue to qualify multi-layer sacrificial film laminates, expanded qualification of electro-discharge machine drilling and advanced materials/coatings for corrosion prevention control. Address subsystem related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Begin efforts to qualify improved cold spray component repair, high performance paint strippers, structural adhesive bond primer, structural component life improvement through cold-work, and maintainability of aircraft slip resistant surface treatment.</p> <p>FY 2016 Plans: Based on advancement in technology, test and qualify new materials or equipment and the procedures/process required for their implementation to improve operational reliability, while containing cost growth. Provide human factors focus to improve maintainability through enhanced maintainer performance. Begin development of sensor fusion for advanced prognostics with focus on low cost and reduced labor procedures that can be done in fleet environments. Continue to qualify improved corrosion preventative compounds. Address subsystem related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Maintain efforts to qualify improved methods of cold spray component repair.</p> <p>FY 2017 Base Plans: Based on advancement in technology, test and qualify new materials or equipment and the procedures/process required for their implementation to improve operational reliability, while containing cost growth. Continue to test and qualify improved corrosion preventative compounds. Address subsystem related reliability/maintainability</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 1041 / Acft Equip Repl/Maint Prog
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Maintain efforts to qualify improved methods of structural component repair.					
FY 2017 OCO Plans: N/A					
Title: Systems Engineering Revitalization	0.844	0.914	0.610	0.000	0.610
Articles:	-	-	-	-	-
FY 2015 Accomplishments: First, continue improvements in the Systems Engineering (SE) Technical Review (SETR) process by adopting model-based SE techniques and begin socializing changes with functional engineering competencies, gaining support. Second, continue checklist implementation and maintenance. Improve user interfaces and possible cloud hosting, update checklist to ever changing policy direction, and explore implementation on Secret Internet Protocol Router Network (SIPRNET). Third, develop, improve, and maintain the NAVAIR SE web portal to assist in dissemination of SE policy, SE tools, and checklists.					
FY 2016 Plans: First, continue improvements in the SE process through model-centric analysis and design techniques in an attempt to shorten acquisition timelines and "Speed to the Fleet" at the system program of record level. Second, correct any deficiencies in the conversion to web-based checklist tool, implement tool in SIPRNET, and execute future upgrades. Third, update checklist questions to account for ever changing policy direction and streamline across the acquisition lifecycle to focus the review on its core elements.					
FY 2017 Base Plans: First, continue improvements in the SETR process by implementing model-centric SE policies, methods, and tools. Second, continue SETR checklist content improvements and improve SETR Manager tool to assist in dissemination of SE policy, SE tools, checklists, and associated training. Third, develop and improve an SE requirements tool and the integrated SE environment.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	3.194	3.322	3.245	0.000	3.245

C. Other Program Funding Summary (\$ in Millions)

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 1041 / <i>Acft Equip Repl/Maint Prog</i>
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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

This is a non-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Aircraft Equipment Reliability/Maintainability Improvement Program (AERMIP) program will, at a minimum, fund 8 to 15 projects a year that investigate and evaluate reliability and maintainability improvements to in-service, out-of-production aircraft equipment. AERMIP projects will have a greater than 75% success rate of insertion into Department of the Navy warfighting systems or support infrastructure.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements					Project (Number/Name) 1041 / Acft Equip Repl/Maint Prog					
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng - Avionics/Wiring	WR	NAWCAD : Patuxent River, MD	5.588	0.234	Dec 2014	0.411	Nov 2015	0.500	Oct 2016	-		0.500	Continuing	Continuing	Continuing
Sys Eng - Avionics/Wiring	C/FFP	Various : Various	0.555	0.000		0.050	Mar 2016	0.000		-		0.000	0.000	0.605	0.605
Sys Eng - Avionics/Wiring	WR	FRC-E : Cherry Point, NC	0.100	0.000		0.020	Feb 2016	0.010	Nov 2016	-		0.010	0.000	0.130	-
Sys Eng - Avionics/Wiring	WR	FRC-SE : Jacksonville, FL	0.000	0.000		0.010	Feb 2016	0.010	Nov 2016	-		0.010	0.000	0.020	-
Sys Eng - Avionics/Wiring	WR	FRC-SW : San Diego, CA	0.000	0.000		0.030	Feb 2016	0.010	Nov 2016	-		0.010	0.000	0.040	-
Sys Eng - Air Vehicle	WR	NAWCAD : Patuxent River, MD	8.461	1.230	Dec 2014	0.919	Nov 2015	1.093	Oct 2016	-		1.093	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-SW : San Diego, CA	1.237	0.500	Oct 2014	0.200	Dec 2015	0.400	Nov 2016	-		0.400	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-E : Cherry Point, NC	1.384	0.218	Nov 2014	0.300	Nov 2015	0.250	Nov 2016	-		0.250	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-SE : Jacksonville, FL	0.853	0.163	Oct 2014	0.240	Nov 2015	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	C/FFP	Various : Various	0.962	0.000		0.070	Feb 2016	0.000		-		0.000	0.000	1.032	1.032
Sys Eng - SE Revitalization	WR	NAWCAD : Patuxent River, MD	0.801	0.090	Nov 2014	0.003	Nov 2015	0.006	Oct 2016	-		0.006	Continuing	Continuing	Continuing
Sys Eng - SE Revitalization	C/FFP	Engility Corp. : Chantilly, VA	3.927	0.542	Dec 2014	0.584	Jan 2016	0.400	Jan 2017	-		0.400	0.000	5.453	5.453
Sys Eng - SE Revitalization	C/CPFF	Stevens Inst of Technology : Hoboken, NJ	0.546	0.212	Mar 2015	0.280	Jan 2016	0.166	Jan 2017	-		0.166	0.000	1.204	1.204
Prior Year Sys Eng NAE/ Prod Dev no longer funded in the FYDP	Various	Various : Various	2.713	0.000		0.000		0.000		-		0.000	0.000	2.713	-
Subtotal			27.127	3.189		3.117		3.045		-		3.045	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0205633N / Aviation Improvements

Project (Number/Name)
1041 / Acft Equip Repl/Maint Prog

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Acft Equip Repl/Maint Prog																																
Avionics & Wiring																																
	Investigate High Value Return on Investment																															
	Wiring Diagnostics and Prognostics																															
	Ultra-high Density Power Storage																															
	High Speed Data Connectors								Wireless Data Bus								Electrical Power Quality Improvements															
Air Vehicle																																
	Corrosion Prevention and Control																															
	Advanced Methods of Structural Repair																															
	Subsystem Improvement Initiatives																															
	Investigate High Value Return on Investment																															
	Expanded Qualification of Electro-Discharge Machine Drilling																															
	Multi-layer Sacrificial Laminates for Windscreen Protection																															
	Rapid Composite Tooling				Sensor Fusion for Advanced Prognostics																											
	Enhanced Maintainer Performance												Maintainability of Signature-controlled Structures																			
	Cold Spray Component Repair																															
	Improved Corrosion Preventative Compounds																															
SE Revitalization																																
	Improved Technical Excellence of Acquisition Programs																															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 1041 / <i>Acft Equip Repl/Maint Prog</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Acft Equip Repl/Maint Prog</i>				
Avionics & Wiring: Investigate High Value Return on Avionics & Wiring Investment	1	2015	4	2021
Avionics & Wiring: Wiring Diagnostics and Prognostics	1	2015	4	2021
Avionics & Wiring: Ultra-high Density Power Storage	1	2015	4	2017
Avionics & Wiring: Wireless Data Bus	1	2017	4	2018
Avionics & Wiring: Electrical Power Quality Improvements	1	2019	4	2019
Avionics & Wiring: High Speed Data Connectors	1	2015	4	2016
Air Vehicle: Corrosion Prevention and Control	1	2015	4	2021
Air Vehicle: Advanced Methods of Structural Repair	1	2015	4	2021
Air Vehicle: Subsystem Improvement Initiatives	1	2015	4	2021
Air Vehicle: Investigate High Value Return on Air Vehicle Investment	1	2015	4	2021
Air Vehicle: Expanded Qualification of Electro-Discharge Machine Drilling	1	2015	4	2015
Air Vehicle: Multi-layer Sacrificial Laminates for Windscreen Protection	1	2015	4	2015
Air Vehicle: Rapid Composite Tooling	1	2015	4	2015
Air Vehicle: Sensor Fusion for Advanced Prognostics	1	2016	4	2017
Air Vehicle: Maintainability of Signature-controlled Structures	1	2017	4	2019
Air Vehicle: Enhanced Maintainer Performance	1	2015	1	2017
Air Vehicle: Cold Spray Component Repair	1	2015	4	2018
Air Vehicle: Improved Corrosion Preventative Compounds	1	2015	4	2016
SE Revitalization: Improved Technical Excellence of Acquisition Programs	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 1355 / Propulsion and Power Component Improvement Program			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1355: <i>Propulsion and Power Component Improvement Program</i>	921.200	59.212	75.508	93.543	-	93.543	107.713	108.511	110.233	112.495	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Propulsion and Power (P&P) Component Improvement Program (CIP) provides the only source of critical design and development engineering support to resolve safety, reliability and maintainability deficiencies of in-service Navy and Marine Corps aircraft propulsion systems. The highest priority issues P&P CIP addresses concern safety-of-flight deficiencies, which account for approximately 80% of P&P CIP efforts. The program also corrects service-revealed deficiencies, improves Operational Readiness and Reliability and Maintainability, and reduces platform Life Cycle Cost. Budgets are allocated across platform-specific teams and multi-platform product support teams based upon long term strategies to achieve safety and affordable readiness goals; the R-3 exhibit details annual portions of those long-term strategies. P&P CIP tasks have reduced the rate of in-flight aborts, safety incidents, non-mission capable rates, scheduled and unscheduled engine removals, maintenance work hours, and overall cost of ownership. This is accomplished through the maintenance and validation of specification performance, testing to qualify engineering changes, verifying life limits, and improving the inherent reliability of the propulsion and power systems as an integral part of Reliability Centered Maintenance initiatives. Historically, the missions, tactics, and environmental exposure of military aircraft systems change to meet new threats or operational demands, and often result in unforeseen problems, which if not corrected, can cause critical safety/readiness degradation, such as those experienced during OPERATIONS DESERT SHIELD/DESERT STORM, ENDURING FREEDOM, and IRAQI FREEDOM due to sand erosion. In addition, new problems arise through actual fleet deployment and usage of the aircraft. System development programs, while geared to resolve as many problems as possible before deployment, cannot duplicate actual operations or account for the vast array of environmental and usage variables, particularly when aircraft missions vary from those that the aircraft was designed to perform. Therefore, it has been found that P&P CIP can provide an immediate engineering response to these flight-critical problems and accelerated engine testing can avoid potential problems. P&P CIP starts after development and Navy acceptance of the first production article and addresses usage and life problems not covered by warranties. P&P CIP addresses engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, aircraft wiring, and fuel and lubricant systems. These efforts continue over the system's life, gradually decreasing to a minimum level sufficient to maintain the reliability, and decrease the operating costs, of older inventory. P&P CIP is a highly leveraged and cooperative tri-service program with Foreign Military Sales participation.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: P3, E2, C2, C130 (T56)	7.221	7.500	9.423	0.000	9.423
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Qualify and incorporate redesigned 3-4 turbine spacer to eliminate vibrational response at low-speed ground idle. Complete qualification and begin incorporation of compressor blade erosion corrosion-resistive coating.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 1355 / Propulsion and Power Component Improvement Program

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Complete qualification of oil health monitoring system. Begin redesign of fuel nozzles to eliminate coking and prevent hot section component damage.</p> <p>FY 2016 Plans: Complete prop shaft repair qualification effort and release repair to depot. Complete turbine clearance effort and release new limits to depot. Begin effort to evaluate pull-criteria and standardize engine performance measurement to ensure consistent, reliable, and accurate results are achieved by operators. Complete incorporation of scavenge filter assemblies and Y-fittings to alleviate oil loss caused by high scavenge back pressure. Complete engine qualification testing and submit engineering changes for production 3-4 turbine spacer, propeller brake redesign, planet gear bearing assembly, front turbine bearing cage, and front turbine bearing support redesigns. Complete reduction gearbox qualification testing for propeller brake redesign to improve reliability.</p> <p>FY 2017 Base Plans: Complete engine qualification testing for planet gear bearing assembly, combustion liner, front turbine bearing cage and front turbine bearing support redesigns, and submit engineering changes for production planet gear bearing assembly and combustion liner redesigns.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: E2/C2/C130/P3 (Props)</p> <p align="right">Articles:</p>	1.930 -	2.750 -	2.130 -	0.000 -	2.130 -
<p>FY 2015 Accomplishments: Complete flight testing of NP2000 modernized pump housing. Complete research and testing of potential NP2000 blade erosion prevention. Continue to investigate all service revealed deficiencies.</p> <p>FY 2016 Plans: Complete fleet incorporation of the NP2000 feather modification to eliminate a failure mode that caused an E-2C mishap. Begin fleet introduction of the NP2000 modernized pump housing and the actuator valve module with new transfer tube configuration. Begin field service evaluation of NP2000 blade erosion protection film. Continue fleet incorporation of NP2000 front spinner with repairable mounting hole. Begin field service evaluation of a new propeller anti/de-icing brush block for the C-130 and P-3 propeller.</p> <p>FY 2017 Base Plans:</p>					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete fleet incorporation of the NP2000 feather modification to eliminate a safety issue. Begin field service evaluation of NP2000 blade erosion protection film. Begin fleet introduction of the NP2000 modernized pump housing and the actuator valve module with new forward housing configuration. Begin fleet incorporation of NP2000 front spinner with repairable mounting hole. Begin field service evaluation of a new propeller anti/de-icing brush block for the C-130 and P-3 propeller. Continue design work and begin testing of C-130 54H60-111 modernized pump housing. FY 2017 OCO Plans: N/A					
Title: EA-6B (J52) FY 2015 Accomplishments: Implement and continue updating repair and inspection criteria for fielded components. Manage parts obsolescence issues. FY 2016 Plans: Implement and continue updating repair and inspection criteria for fielded components. Manage parts obsolescence issues. FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A	1.410	1.050	0.000	0.000	0.000
Articles:	-	-	-	-	-
Title: SH-60B/F, HH-60H, MH-60R/S (T700) FY 2015 Accomplishments: Continue redesign work to reduce impact of cost and readiness drivers for the T700 engine. Initiate T700 accelerated simulated mission endurance testing to demonstrate newly redesigned ceramic matrix composite shrouds and cutback diffuser. Conduct lithium battery development testing. FY 2016 Plans:	4.090	2.750	4.314	0.000	4.314
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue redesign work to reduce impact of cost and readiness drivers for the T700 engine. Complete T700 accelerated simulated mission endurance testing to demonstrate newly redesigned ceramic matrix composite shrouds and cutback diffuser. Continue lithium battery qualification. Complete air turbine starter qualification.</p> <p>FY 2017 Base Plans: Continue redesign work to reduce impact of cost and readiness drivers for the T700 engine. Conduct T700 accelerated simulated mission endurance testing to demonstrate newly redesigned ceramic matrix composite shrouds. Continue lithium battery qualification. Continue development of Black Gold environmental coating system.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: H-1 (T400/T700)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continue support of common T700 engine and air turbine starter projects. Complete qualification and safety testing of the AH-1W lithium battery.</p> <p>FY 2016 Plans: Continue support of common T700 engine and air turbine starter projects. Complete project to address obsolescence for non-volatile random access memory chip in T700-401C Digital Engine Control Unit.</p> <p>FY 2017 Base Plans: Continue support of common T700 engine and air turbine starter projects. Conduct AH-1W starter improvement project. Complete main rotor gearbox oil filter relocation project.</p> <p>FY 2017 OCO Plans: N/A</p>	1.080	0.700	1.000	0.000	1.000
	-	-	-	-	-
<p>Title: AV-8B (F402)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Complete flight test evaluation of redesigned low pressure compressor stage one blade and damper. Complete evaluation and qualification of engine variable inlet control system hydromechanical unit permanent magnet</p>	5.640	7.125	6.163	0.000	6.163
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>alternator ceramic bearing. Complete tasking for application of low plasticity burnishing on low pressure compressor stage two and three blades.</p> <p>FY 2016 Plans: Complete tasking for application of low plasticity burnishing on low pressure compressor stage two and three blades. Redesign #4 bearing insulating blanket. Update engine performance deterioration study. Assess mission profile analysis for life management plan update.</p> <p>FY 2017 Base Plans: Continue engine performance monitoring program. Complete low pressure turbine vane platform cracking, exhaust duct manifold cracking, and combustion chamber inner subassembly cracking tasks. Update critical rotating part life predictions based upon updated mission profiles.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: H-53/H-46/H-3 (T58/T64)</p> <p align="right">Articles:</p>	4.940	4.250	5.884	0.000	5.884
<p>FY 2015 Accomplishments: H-46/H-3 (T58) Continue to develop inspection and repair criteria for fielded components. H-53 (T64) Continue life management analysis and reliability centered maintenance efforts. Continue to develop inspection and repair criteria for fielded components. Continue cost of ownership reduction programs. Complete accessory gearbox free-wheel unit lubrication improvement.</p> <p>FY 2016 Plans: H-46/H-3 (T58) Continue to develop inspection and repair criteria for fielded components. H-53 (T64) Continue life management analysis and reliability centered maintenance efforts. Continue to develop inspection and repair criteria for fielded components. Continue cost of ownership reduction programs. Qualify and implement accessory gearbox free-wheel unit lubrication design improvement. Complete main rotor shaft low-cycle fatigue analysis.</p> <p>FY 2017 Base Plans:</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
H-46/H-3 (T58) Continue to develop inspection and repair criteria for fielded components.					
H-53 (T64) Continue life management analysis and reliability centered maintenance efforts. Continue to develop inspection and repair criteria for fielded components. Continue cost of ownership reduction programs. Qualify and implement accessory gearbox free-wheel unit lubrication design improvement. Complete main rotor shaft low-cycle fatigue analysis.					
FY 2017 OCO Plans: N/A					
Title: F-18 C/D/E/F (F414/F404)	17.452	14.286	14.958	0.000	14.958
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Complete test cell performance management process to improve operability and reduce unscheduled engine removals. Complete Variable Exhaust Nozzle (VEN) pump cover life improvement, pilot spraybar flow optimization to improve light off times, and afterburner spraybar heat shield durability improvements. Implement fuel nozzle life increase, alternate compressor blade rub coats to improve repairability, and blade tip sealing performance.					
FY 2016 Plans: Complete U.S. Navy F404 mission analysis and assess changes to part lives. Complete engine pressure ratio measurement accuracy improvement and develop an implementation strategy. Reduce non-recoverable in-flight shutdown by identifying key contributors and addressing the top five reasons. Reduce in-flight aborts by identifying key contributors and addressing the top five reasons. Monitor test cell performance reports from fleet and assess changes required. Finalize design for removing life limit main fuel manifold, complete outer bypass duct (OBD) delamination preliminary design, and complete and implement OBD improved anchor nut durability. Complete preliminary design and down-select candidate to improve N2 shroud durability, complete preliminary design, down-select candidate to eliminate VEN actuator wear/binding, and test and verify full-authority digital electronic control 4NH software changes to reduce stalls. Redesign VEN boost pump rear cover to eliminate a life limit, improve fuel tube Rosan joint fittings to eliminate external fuel leaks, and identify oil system improvements to reduce unscheduled removals.					
FY 2017 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Update stress analysis models to extend the lives of the combustion case, low-pressure turbine (LPT) disk, and stage 1 fan rotor. Complete preliminary design and start detail design to down-select the field repair for fan case rubber damage. Test and verify that the main fuel manifold is no longer life-limited. Complete high-pressure turbine blade preliminary design, and down-select a design to address service distress causes for removal. Complete LPT shrouds preliminary design, and down-select a design to allow for field replacement. Complete test and verification of Rosan joint fittings and release to the fleet. Complete preliminary design, and down-select the fuel actuator engineering test bench design. Conduct tests to characterize influences and interactions, and confirm causes for VEN binding. Test and verify that blade dovetail coatings meet service use requirements. Evaluate oil consumption limits, and down-select designs to oil system components that reduce in-flight aborts. Explore the use of surface treatments on static components to allow for extended service use. Reassess the engine build window to identify ownership costs reductions.					
FY 2017 OCO Plans: N/A					
Title: T-45 (F405)	1.631	2.750	4.723	0.000	4.723
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continue redesign work to reduce impact of cost and readiness drivers for the F405 engine based on service revealed deficiencies and address safety issues reported from fleet. Complete component testing and initiate engine testing of low pressure compressor blade improvements to mitigate blade root cracking in-service, and reduce scrap rate at overhaul. Complete high pressure compressor redesigns to improve corrosion resistance and continue redesigns to improve performance retention. Continue redesign of engine correct rotation system to reduce high failure rate and reduce cost of ownership.					
FY 2016 Plans: Continue redesign work to reduce impact of cost and readiness drivers for the F405 engine based on service revealed deficiencies and address safety issues reported from fleet. Complete high pressure compressor seal redesign to improve performance retention, and reduce scrap rate at overhaul. Complete high and low pressure turbine seal redesign to improve safety and performance retention, and reduce scrap rate at overhaul. Initiate high pressure turbine redesign to reduce scrap rate at overhaul. Initiate comparison of flight profiles and engine duty cycles between T-45 operating sites to evaluate differences in engine rejection causes and parts usage.					
FY 2017 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue redesign work to reduce impact of cost and readiness drivers for the F405 engine based on service revealed deficiencies, and address safety issues reported from fleet. Complete component endurance testing of low-pressure compressor blade improvements to mitigate blade root cracking in-service and reduce scrap rate at overhaul. Complete redesign of engine correct rotation system to reduce high failure rate and reduce cost of ownership. Complete high-pressure turbine and low-pressure turbine seal redesign to improve safety and performance retention, and reduce scrap rate at overhaul. Complete high-pressure compressor seal redesign to improve safety and performance retention, and reduce scrap rate at overhaul. Initiate root cause investigation of perceived installed engine vibrations to reduce high rejection rate and cost of ownership. Initiate study to identify engine future obsolescence areas. Complete effort to extend fatigue life of high-pressure turbine and low-pressure turbine discs using new material data to reduce cost of ownership.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: V-22 Propulsion</p> <p align="right">Articles:</p>	0.850	1.750	3.392	0.000	3.392
<p>FY 2015 Accomplishments: Begin implementation of nacelle blower and machined impellers to mitigate safety issue and increase scheduled maintenance interval by 2x. Upgrade engine control hardware-in-the-loop (HWIL) simulation with updated engine control software and transition to "Software" full authority digital engine control to reduce future costs of maintaining the HWIL capability. Kick off auxiliary power unit redesign efforts per FY14 trade study.</p> <p>FY 2016 Plans: Implement nacelle blower and machined impellers design changes. Validate engine control HWIL simulation with updated engine control software and transition to "Software" full authority digital engine control to reduce future costs of maintaining the HWIL capability. Continue development of monitoring algorithms and addition of high frequency vibration monitoring to drive system gearboxes for trend monitoring. Continue prop rotor gearbox design improvements to reduce disengagement events. Improve engine air particle separator scavenge flow to decrease sand ingestion into the engine for additional engine reliability. Produce and conduct verification testing for several potential design solutions that are intended to mitigate sand accumulation in the turbine.</p> <p>FY 2017 Base Plans:</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Develop improvements for the K8/K9 relays to reduce K8/K9, regulator converter unit, and auxiliary power unit starter failures. Develop an improved power assurance check for the engines to ensure accurate assessment of engine health. FY 2017 OCO Plans: N/A					
Title: Adversary (J85) (F100)	1.200	1.160	1.434	0.000	1.434
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continue contributing to the common Component Improvement Program with the U.S. Air Force and Foreign Military Sales group for the J85 engine. Investigate improvements on support equipment, revision of the life cycle fatigue life of rotating components, definition of optimal maintenance and schedule requirements, and optimization of engine functional and trim procedures and software.					
FY 2016 Plans: Continue contributing to the J85 and F100 common Component Improvement Program (CIP) with the U.S. Air Force (USAF) and Foreign Military Sales group. Perform validation and life assessment of life cycle fatigue components, including hardware inspection data, mission mix analysis, advanced fracture mechanics, and stress models to provide a revised J85 life cycle fatigue life update. Investigate and approve a turbine nozzle activated diffusion healing repair procedure, and support equipment upgrades and other repair procedures. Approve F100 main fuel control seal durability improvement, first blade/second stage vane durability improvement, and combustion chamber stiffener improvement. Analyze CIP benefits, updated mission, and components life extension.					
FY 2017 Base Plans: Continue contributing to the J85 and F100 common CIP with the USAF and Foreign Military Sales group. Perform validation and life assessment of life cycle fatigue components, including hardware inspection data and stress models to provide a revised J85 life cycle fatigue life update. Implement an upgraded modification of the engine performance monitoring system for future mission analysis. Investigate and approve a stage 2 turbine nozzle design that mitigates cracking due to oxidation. Develop support equipment and engine repair procedures that will improve maintainability and extend the useful life of parts. Approve F100 main fuel control					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
seal durability improvement, first blade/second stage vane durability improvement, and combustion chamber stiffener improvement. Analyze CIP benefits, updated mission, and components life extension. FY 2017 OCO Plans: N/A					
Title: Joint Strike Fighter (F135 Engine) Articles:	5.000 -	20.977 -	30.479 -	0.000 -	30.479 -
FY 2015 Accomplishments: Work with Joint Program Office and USAF to prioritize and develop engineering project descriptions that resolve Fleet revealed deficiencies that are not part of system development. In concert with the USAF, support Joint service Lead-the-Fleet (LTF) engine testing on the conventional takeoff and landing/aircraft carriers system. Procure the short takeoff/vertical landing hardware to initiate LTF testing. FY 2016 Plans: Continue to work with Joint Program Office and U.S. Air Force (USAF) to prioritize and develop engineering project descriptions that resolve Fleet revealed deficiencies that are not part of system development. In concert with the USAF, support Joint service Lead-the-Fleet (LTF) engine testing on the conventional takeoff and landing/aircraft carriers system. Continue the procurement of the short takeoff/vertical landing hardware to initiate LTF testing. FY 2017 Base Plans: Continue to work with Joint Program Office and USAF to prioritize and develop engineering project descriptions that resolve Fleet revealed deficiencies that are not part of system development. In concert with the USAF, support Joint service LTF engine testing on the conventional takeoff and landing/aircraft carriers system. Continue the procurement of the short takeoff/vertical landing hardware to initiate LTF testing. FY 2017 OCO Plans: N/A					
Title: P-8A (CFM56 Engine) Articles:	0.000 -	1.150 -	1.150 -	0.000 -	1.150 -
FY 2015 Accomplishments: N/A FY 2016 Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Develop out-year program engine management planning and operational/readiness metric baselines. Develop engine operational usage mission spectrum for use in original equipment manufacturer (OEM) engine life-limited component updates. Perform maturation of engine management planning activities with inputs from age exploration tasks: field service bore-scoping of high-time engines, engine component part condition assessments on first engine depot inductions and continued review of operational usage data. Evaluate leading indicators, service-revealed deficiencies, and emergent issues from fleet operational usage on all subsystems (engine, auxiliary power unit, fuel, electrical, electrical wiring). Evaluate OEM partial cycle analysis for use with engine life limited parts.</p> <p>FY 2017 Base Plans: Mature out-year program engine management planning and updates to operational/readiness metric baselines informed by further age-exploration results from post-deployment bore-scope inspections, engine depot part condition assessment, and operational usage data. Continue age exploration via post-deployment bore-scope inspections, engine depot part condition assessment, and operational usage data. Evaluate impact of high altitude antisubmarine warfare introduced under P-8A Increment 2 engineering change proposals on engine mission usage. Mature subsystem planning based on evaluation leading indicators, age exploration, maintenance task improvements, service-revealed deficiencies, and emergent issues from fleet operational usage on all subsystems (engine, auxiliary power unit, fuel, electrical, electrical wiring). Evaluate incremental progress of original equipment manufacturer life limit extension analysis on engine life limited parts.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Multi-Platform Product Support Teams</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continue projects to provide common support to multiple platforms in the areas of improved drive systems, secondary power, and mechanical systems; improve tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels, lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. Study data system solutions for the Naval Power Avionics Thermal and Hydraulics Lab and</p>	6.768	7.310	8.493	0.000	8.493
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
install full control system solution. Provide support for growing modeling capability with large storage solutions for the research, development, test, and evaluation connected devices.					
<i>FY 2016 Plans:</i> Continue projects to provide common support to multiple platforms in the areas of improved drive systems, secondary power, and mechanical systems; improve tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels, lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. Study data system solutions for the Naval Power Avionics Thermal and Hydraulics Lab and install full control system solution. Provide support for growing modeling capability with large storage solutions for the research, development, test, and evaluation connected devices.					
<i>FY 2017 Base Plans:</i> Continue projects to provide common support to multiple platforms in the areas of improved drive systems, secondary power, and mechanical systems; improve tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels, lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. Study data system solutions for the Naval Power Avionics Thermal and Hydraulics Lab and install full control system solution. Provide support for growing modeling capability with large storage solutions for the research, development, test, and evaluation connected devices.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	59.212	75.508	93.543	0.000	93.543

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a NON-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

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E. Performance Metrics

The Propulsion and Power Component (P&P) Improvement Program (CIP) will support engineering design and development efforts for 100% of the safety of flight issues on in-service propulsion and power systems covered under the program. Over the past two years, this equated to more than 275 individual Engineering Project Descriptions (EPDs). P&P CIP will also address reliability and maintainability deficiencies equating to at least another 100 individual EPDs. Similar projects have increased the aggregate engine reliability across the USN/USMC fleet, as measured by the mean flight hours between engine removals, by 40% over the past eight years.

Program execution will be actively managed on 100% of the projects via contractor earned value data and overall obligation and expenditure rates as reflected in Navy ERP. Data will be analyzed and measured against OSD/FMB benchmarks on a monthly basis.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng T56 Engine Program	WR	NAWCAD : Patuxent River, MD	31.917	3.050	Oct 2014	3.500	Nov 2015	4.500	Nov 2016	-		4.500	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	SS/CPFF	Rolls Royce : Indianapolis, IN	46.000	3.671	Jan 2015	3.500	Jan 2016	4.113	Jan 2017	-		4.113	0.000	57.284	57.284
Sys Eng T56 Engine Program	WR	FRC-E : Cherry Point, NC	1.398	0.300	Oct 2014	0.200	Nov 2015	0.750	Nov 2016	-		0.750	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	WR	FRC-SE : Jacksonville, FL	0.637	0.200	Oct 2014	0.250	Nov 2015	0.010	Nov 2016	-		0.010	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	WR	FRC-SW : North Island, CA	0.075	0.000		0.050	Nov 2015	0.050	Nov 2016	-		0.050	Continuing	Continuing	Continuing
Sys Eng Props Program	SS/CPFF	Hamilton Sundstrand : Windsor Locks, CT	22.105	1.930	Jan 2015	2.750	Jan 2016	2.130	Jan 2017	-		2.130	0.000	28.915	28.915
Sys Eng J52 Engine Program	WR	NAWCAD : Patuxent River, MD	13.629	0.500	Oct 2014	0.300	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng J52 Engine Program	SS/CPFF	UTC Pratt & Whitney : East Hartford, CT	40.295	0.910	Jan 2015	0.550	Jan 2016	0.000		-		0.000	0.000	41.755	41.755
Sys Eng J52 Engine Program	WR	FRC-E : Cherry Point, NC	0.085	0.000		0.050	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng J52 Engine Program	WR	FRC-SE : Jacksonville, FL	0.275	0.000		0.150	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng T700 Engine Program	WR	NAWCAD : Patuxent River, MD	13.651	1.090	Oct 2014	1.500	Nov 2015	1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
Sys Eng T700 Engine Program	SS/CPFF	General Electric : Lynn, MA	27.528	3.000	Jan 2015	1.250	Jan 2016	2.814	Jan 2017	-		2.814	0.000	34.592	34.592
Sys Eng T400 Engine Program	WR	NAWCAD : Patuxent River, MD	1.067	0.400	Oct 2014	0.700	Nov 2015	1.000	Nov 2016	-		1.000	Continuing	Continuing	Continuing
Sys Eng T400 Engine Program	SS/CPFF	UTC Pratt & Whitney : East Hartford, CT	5.210	0.680	Jan 2015	0.000		0.000		-		0.000	0.000	5.890	5.890
Sys Eng F402 Engine Program	WR	NAWCAD : Patuxent River, MD	15.912	1.775	Oct 2014	1.750	Nov 2015	1.677	Nov 2016	-		1.677	Continuing	Continuing	Continuing

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng F402 Engine Program	SS/CPFF	Rolls Royce : Bristol, England, UK	69.529	3.700	Jan 2015	5.225	Jan 2016	4.436	Jan 2017	-		4.436	0.000	82.890	82.890
Sys Eng F402 Engine Program	WR	FRC-E : Cherry Point, NC	0.477	0.165	Oct 2014	0.150	Nov 2015	0.050	Nov 2016	-		0.050	Continuing	Continuing	Continuing
Sys Eng T58/T64 Engine Program	WR	NAWCAD : Patuxent River, MD	31.079	2.000	Oct 2014	1.750	Nov 2015	2.150	Nov 2016	-		2.150	Continuing	Continuing	Continuing
Sys Eng T58/T64 Engine Program	SS/CPFF	General Electric : Lynn, MA	81.168	2.940	Jan 2015	2.500	Jan 2016	3.734	Jan 2017	-		3.734	0.000	90.342	90.342
Sys Eng F414/F404 Engine Program	WR	NAWCAD : Patuxent River, MD	31.675	5.000	Oct 2014	5.500	Nov 2015	5.500	Nov 2016	-		5.500	Continuing	Continuing	Continuing
Sys Eng F414/F404 Engine Program	SS/CPFF	General Electric : Lynn, MA	127.754	12.052	Jan 2015	8.536	Jan 2016	9.208	Jan 2017	-		9.208	0.000	157.550	157.550
Sys Eng F414/F404 Engine Program	WR	FRC-SE : Jacksonville, FL	0.133	0.400	Oct 2014	0.250	Nov 2015	0.250	Nov 2016	-		0.250	Continuing	Continuing	Continuing
Sys Eng F405 Engine Program	WR	NAWCAD : Patuxent River, MD	7.706	1.631	Oct 2014	1.250	Nov 2015	3.208	Nov 2016	-		3.208	Continuing	Continuing	Continuing
Sys Eng F405 Engine Program	SS/CPFF	Rolls Royce : Bristol, England, UK	33.617	0.000		1.500	Jan 2016	1.515	Jan 2017	-		1.515	0.000	36.632	36.632
Sys Eng V-22 Propulsion Program	WR	NAWCAD : Patuxent River, MD	0.135	0.000		0.750	Nov 2015	0.892	Nov 2016	-		0.892	Continuing	Continuing	Continuing
Sys Eng V-22 Propulsion Program	SS/FFP	Bell- Boeing : Ft. Worth, TX	5.929	0.850	Jan 2015	0.500	Jan 2016	2.000	Jan 2017	-		2.000	0.000	9.279	9.279
Sys Eng V-22 Propulsion Program	SS/CPFF	Rolls Royce : Indianapolis, IN	0.080	0.000		0.500	Jan 2016	0.500	Jan 2017	-		0.500	0.000	1.080	1.080
Sys Eng Adversary J85 Engine Program	WR	NAWCAD : Patuxent River, MD	1.256	0.680	Oct 2014	0.660	Nov 2015	1.034	Nov 2016	-		1.034	Continuing	Continuing	Continuing
Sys Eng Adversary J85 Engine Program	WR	FRC-SE : Jacksonville, FL	0.018	0.020	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng Adversary J85 Engine Program	SS/CPFF	General Electric : Lynn, MA	1.272	0.500	Jan 2015	0.500	Jan 2016	0.400	Jan 2017	-		0.400	0.000	2.672	2.672
Sys Eng JSF Engine Program	WR	NAWCAD : Patuxent River, MD	0.000	5.000	Oct 2014	5.000	Nov 2015	1.000	Nov 2016	-		1.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements					Project (Number/Name) 1355 / Propulsion and Power Component Improvement Program				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Sys Eng JSF Engine Program	SS/FFP	UTC Pratt & Whitney : East Hartford, CT	0.000	0.000		15.977	Jan 2016	29.479	Jan 2017	-		29.479	0.000	45.456	45.456
Sys Eng P-8A Engine Program	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.150	Nov 2015	1.150	Nov 2016	-		1.150	Continuing	Continuing	Continuing
Sys Eng Lab Fld Activity-1.0 or more	WR	NAWCAD : Patuxent River, MD	198.674	5.838	Oct 2014	6.500	Nov 2015	7.695	Nov 2016	-		7.695	Continuing	Continuing	Continuing
Sys Eng Other In-House Spt	Various	Various : Various	20.217	0.200	Nov 2014	0.200	Nov 2015	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
GFE*	Reqn	DES/DLA : Various	13.542	0.200	Jan 2015	0.200	Jan 2016	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
Prior Year Prod Dev costs no longer funded in the FYDP	Various	Various : Various	62.882	0.000		0.000		0.000		-		0.000	0.000	62.882	-
Subtotal			906.927	58.682		75.098		93.145		-		93.145	-	-	-

Remarks

GFE includes expected cost of fuel necessary to support engine development and qualification testing.
Total may be off due to rounding.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	Various	Various : Various	8.000	0.000		0.300	Nov 2015	0.300	Nov 2016	-		0.300	Continuing	Continuing	Continuing
Development Support	WR	FRC-SW : North Island, CA	0.403	0.210	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Support	WR	FRC-E : Cherry Point, NC	0.000	0.105	Jun 2015	0.000		0.000		-		0.000	0.000	0.105	-
Subtotal			8.403	0.315		0.300		0.300		-		0.300	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 1355 / Propulsion and Power Component Improvement Program							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	Various	Various : Various	3.392	0.000		0.050	Nov 2015	0.050	Nov 2016	-		0.050	Continuing	Continuing	Continuing
Development Test & Evaluation	WR	NSWC : Crane, IN	0.358	0.190	Nov 2014	0.000		0.000		-		0.000	0.000	0.548	-
Subtotal			3.750	0.190		0.050		0.050		-		0.050	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	NAVAIR : Patuxent River, MD	0.673	0.025	Oct 2014	0.060	Oct 2015	0.048	Oct 2016	-		0.048	Continuing	Continuing	Continuing
Prior Year Mgmt cost no longer funded in the FYDP	Various	Various : Various	1.447	0.000		0.000		0.000		-		0.000	0.000	1.447	-
Subtotal			2.120	0.025		0.060		0.048		-		0.048	-	-	-
Project Cost Totals			921.200	59.212		75.508		93.543		-		93.543	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 1355 / Propulsion and Power Component Improvement Program
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Propulsion and Power Component Improvement Program	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Component Improvement Program																												
	Systems Engineering Propulsion and Power Component Improvements																											
	Systems Engineering to Correct Flight Safety Deficiencies																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / <i>Aviation Improvements</i>	Project (Number/Name) 1355 / <i>Propulsion and Power Component Improvement Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Propulsion and Power Component Improvement Program</i>				
Component Improvement Program: Engine Improvements	1	2015	4	2021
Component Improvement Program: Power & Propulsion	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements				Project (Number/Name) 2269 / Expeditionary Airfield Improvements			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2269: Expeditionary Airfield Improvements	13.347	12.210	18.273	14.948	-	14.948	14.124	2.646	0.000	0.000	0.000	75.548
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Expeditionary Airfields (EAF) program was a FY2012 New Start, with funding released to the project in May 2012. The EAF program designs, develops and tests a Sustainment Lighting System (SLS) to replace the obsolete legacy EAF lighting system. This system will provide EAF Marine Aircraft Wing Support Squadrons with the required EAF equipment to install Forward Operating Bases and Forward Arming and Refueling Points. With the deployment of this equipment, the Marine Aircraft Wing Support Squadrons can support all United States Marine Corps (USMC) aircraft allowing the Combatant Commanders the flexibility to deploy Aircraft Combat Elements to meet anticipated threats. Milestone B moved from third quarter of fiscal year 2014 to first quarter of 2015 due to contract negotiation delays.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Expeditionary Airfields Improvements	12.210	18.273	14.948	0.000	14.948
Articles:	-	-	-	-	-
Description: The EAF program designs, develops, tests and fields a Sustainment Lighting System (SLS) to replace the obsolete legacy EAF lighting system. This system will provide EAF Marine Aircraft Wing Support Squadrons with the required EAF equipment to install Forward Operating Bases and Forward Arming and Refueling Points. With the deployment of this equipment the Marine Aircraft Wing Support Squadron can support all USMC aircraft allowing the Combatant Commanders the flexibility to deploy Aircraft Combat Elements to meet anticipated threats.					
FY 2015 Accomplishments: Successfully achieved Milestone B decision approval. Awarded the Sustainment Lighting System (SLS) contract. Began the design, development and integration of the SLS program leading into the System Requirement Review (SRR). Additional funding provided for the EAF Center of Excellence.					
FY 2016 Plans: Continue the design, development, and integration of the SLS program leading to Preliminary Design Review (PDR) and Critical Design Review (CDR).					
FY 2017 Base Plans: Conduct Integration Readiness Review (IRR), Developmental (DT) testing and Test Readiness Review (TRR).					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 2269 / Expeditionary Airfield Improvements

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	12.210	18.273	14.948	0.000	14.948

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/4213: ASE- Expeditionary Airfields	7.423	8.425	7.984	-	7.984	8.233	8.409	8.575	8.798	Continuing	Continuing

Remarks

D. Acquisition Strategy

Expeditionary Airfields (EAF): Cost Plus Incentive Fee contract for the system design, development, integration and testing of the Sustainment Lighting System awarded in December 2014.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 2269 / Expeditionary Airfield Improvements
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	WR	NAWCAD : Lakehurst, NJ	7.315	3.774	Nov 2014	6.975	Nov 2015	6.151	Nov 2016	-		6.151	4.348	28.563	-
Primary Hardware/ Software Development	C/CPIF	Tactical Lighting Systems, Inc : Addison, Illinois	2.500	3.993	Apr 2015	8.793	Jan 2016	6.600	Jan 2017	-		6.600	7.400	29.286	37.620
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	1.700	0.000		0.000		0.000		-		0.000	0.000	1.700	-
Subtotal			11.515	7.767		15.768		12.751		-		12.751	11.748	59.549	-

Remarks
 Costs were updated to reflect actuals and current planning. \$5M added in FY15 for the "Center of Excellence" for EAF, which includes an airfield to be used by USA/USAF and USMC for exercises (including joint) and potentially expeditionary airfield installation/removal drills.

 Funding previously budgeted in Product Development to support the Congressional Add funding has been realigned to new Cost Categories in Support in FY15 to provide the required resources for the Expeditionary Airfield Center of Excellence.

 Primary Hardware Development and Systems Engineering have been updated to support costs required post protest of the Tactical Lighting Systems Contract.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics	WR	NAWCAD : Lakehurst, NJ	0.638	0.237	Nov 2014	1.083	Nov 2015	0.657	Nov 2016	-		0.657	0.886	3.501	-
Government Engineering Support	MIPR	US Army Engineer Research and Development Center : Vicksburg, MS	0.000	0.960	Jan 2016	0.000		0.000		-		0.000	0.000	0.960	-
Government Engineering Support	MIPR	Tyndall AFB : Panama City, Florida	0.000	0.850	May 2016	0.000		0.000		-		0.000	0.000	0.850	-
Engineering Support	C/CPFF	NAVSEA : Washington Navy Yard, DC	0.000	1.777	Apr 2016	0.000		0.000		-		0.000	0.000	1.777	2.130

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 2269 / Expeditionary Airfield Improvements
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Support no longer funded in the FYDP	Various	Various : Various	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Subtotal			0.688	3.824		1.083		0.657		-		0.657	0.886	7.138	-

Remarks
Costs were updated to reflect actuals and current planning. Funding previously budgeted in Product Development to support the Congressional Add funding has been realigned to new Support Cost Categories in FY15 to provide the required resources for the Expeditionary Airfield Center of Excellence.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation	WR	NAWCAD : Lakehurst, NJ	0.639	0.303	Nov 2014	1.055	Nov 2015	1.122	Nov 2016	-		1.122	2.916	6.035	-
Opeval Test Support	WR	COMOPTEVFOR : Norfolk, VA	0.069	0.000		0.057	Nov 2015	0.113	Nov 2016	-		0.113	0.922	1.161	-
Subtotal			0.708	0.303		1.112		1.235		-		1.235	3.838	7.196	-

Remarks
Costs were updated to reflect actuals and current planning.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Support Services	C/CPFF	Various : Various	0.436	0.316	Dec 2014	0.310	Dec 2015	0.305	Dec 2016	-		0.305	0.298	1.665	1.664
Subtotal			0.436	0.316		0.310		0.305		-		0.305	0.298	1.665	1.664

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		13.347	12.210	18.273	14.948	-	14.948	16.770	75.548	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 2269 / Expeditionary Airfield Improvements
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Proj 2269	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Acquisition Milestones																													
Milestones	MS B ▲																			MS C ▲	IOC ▲								
Systems Development																													
System Design and Development	HDWRE																												
	SW																												
Reviews			SRR II ■		PDR ■		CDR ■		TRR ■						OTRR ■														
Test and Evaluation																													
Formal Testing																	DT&E				OT								
Production Milestones																													
Contract Awards	SDD ●																												
Deliveries																													
																	FRP ▼												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / Aviation Improvements	Project (Number/Name) 2269 / Expeditionary Airfield Improvements
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2269				
Acquisition Milestones: Milestones: Milestone B	1	2015	1	2015
Acquisition Milestones: Milestones: Milestone C	2	2019	2	2019
Acquisition Milestones: Milestones: IOC	4	2019	4	2019
Systems Development: System Design and Development: Hardware Development	1	2015	4	2018
Systems Development: System Design and Development: Software Development	1	2015	4	2018
Systems Development: Reviews: Systems Requirements review	4	2015	4	2015
Systems Development: Reviews: Preliminary Design Review	2	2016	2	2016
Systems Development: Reviews: Critical Design Review	4	2016	4	2016
Systems Development: Reviews: Test Readiness Review	2	2017	2	2017
Systems Development: Reviews: Operational Test Readiness Review	3	2018	3	2018
Test and Evaluation: Formal Testing: Tech Eval/Dev T&E	2	2017	1	2018
Test and Evaluation: Formal Testing: Operational Testing	4	2018	1	2019
Production Milestones: Contract Awards: Contract Award	2	2015	2	2015
Deliveries: Delivery: Lot 1	2	2019	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0205675N / <i>Operational Nuclear Power Sys</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	104.023	101.323	101.786	-	101.786	123.969	114.421	104.061	108.357	Continuing	Continuing
1303: <i>Operational Nuclear Power System</i>	0.000	104.023	101.323	101.786	-	101.786	123.969	114.421	104.061	108.357	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details of this program element are classified CONFIDENTIAL and are submitted annually to Congress in the classified budget justification books.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	104.023	101.323	103.605	-	103.605
Current President's Budget	104.023	101.323	101.786	-	101.786
Total Adjustments	0.000	0.000	-1.819	-	-1.819
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-0.011	-	-0.011
• Rate/Misc Adjustments	0.000	0.000	-1.808	-	-1.808

Change Summary Explanation

Technical: Not applicable.
Schedule: Not applicable.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,247.384	82.575	77.909	82.159	-	82.159	94.060	90.438	86.252	88.239	Continuing	Continuing
2270: <i>Exp Indirect Fire Gen Supt Wpn Sys</i>	223.727	27.623	22.059	25.381	-	25.381	26.441	25.852	26.102	26.675	Continuing	Continuing
2273: <i>Air Ops Cmd & Control (C2) Sys</i>	405.175	8.070	7.713	11.946	-	11.946	11.571	11.762	12.026	12.333	Continuing	Continuing
2274: <i>Command & Control Warfare Sys</i>	25.117	7.833	8.940	6.531	-	6.531	8.138	8.232	7.052	7.213	Continuing	Continuing
2275: <i>Marine Corps Tactical Radio Systems</i>	29.853	6.577	3.351	12.661	-	12.661	9.300	8.004	7.063	7.124	Continuing	Continuing
2276: <i>Comms Switching and Control Sys</i>	39.081	1.754	2.006	2.216	-	2.216	3.277	3.249	3.187	3.258	Continuing	Continuing
2277: <i>System Engineering and Integration</i>	30.054	11.946	5.085	4.861	-	4.861	4.866	4.855	5.247	5.361	Continuing	Continuing
2278: <i>Air Defense Weapons System</i>	41.281	3.453	1.721	2.795	-	2.795	1.807	2.880	2.925	2.992	Continuing	Continuing
2510: <i>MAGTF CSSE & SE</i>	274.353	7.128	2.998	2.345	-	2.345	1.216	0.934	0.963	0.984	Continuing	Continuing
3099: <i>Radar System</i>	178.743	8.191	11.036	13.423	-	13.423	27.444	24.670	21.687	22.299	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	0.000	13.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.000

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 582

A. Mission Description and Budget Item Justification

This program element provides funding to develop the command and control (C2) support and information infrastructures for the Fleet Marine Force and supporting establishment. Doctrinally, the C2 support system and the information infrastructure form two parts of a triad of capabilities which permits command and control systems to be transformed into a complete operating system. The third element of the triad is command and control organization and is not covered in this program element. USMC command and control is divided into seven functional areas and one supporting functional area as follows: intelligence C2, fire support C2, air operations C2, radio systems C2, combat service support C2, warfare C2, radar systems C2, and C2 support (information processing and communications).

Within this program element, subprojects have been grouped by C2 functional area for more efficient planning. Air defense weapons systems have been added to facilitate planning and a separate project is used for systems assigned to the supporting establishment. Subprojects which support the Commander's decision processes

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have been collected into the Command Post Systems project since these systems must work in close cooperation to ensure effective C2 of Marine Air Ground Task Forces.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	73.982	67.763	78.512	-	78.512
Current President's Budget	82.575	77.909	82.159	-	82.159
Total Adjustments	8.593	10.146	3.647	-	3.647
• Congressional General Reductions	-	-0.483			
• Congressional Directed Reductions	-	-2.371			
• Congressional Rescissions	-	-			
• Congressional Adds	-	13.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	9.488	0.000			
• SBIR/STTR Transfer	-0.894	0.000			
• Program Adjustments	0.000	0.000	17.815	-	17.815
• Rate/Misc Adjustments	-0.001	0.000	-14.168	-	-14.168

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *Radar Enhancements*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	0.000	13.000
	0.000	13.000
	0.000	13.000

Change Summary Explanation

The funding increase of \$4.250M from FY16 to FY17 can be attributed to the initiation of new product development and testing efforts, primarily for the Marine Air Ground Task Force (MAGTF) Command and Control (C2) Systems and Applications (MAGTF C2 SA), Networking on the Move (NOTM), and Composite Tracking Network (CTN).

MAGTF C2 SA funds development, integration and testing of software applications and enhancements for Software Release 4.X, Marine Corps Enterprise information Technology Services (MCEITS) and Marine Corps Software Resource Center (MCSRC) to enable more effective information sharing and the ability for Marines to make informed and timely decisions.

NOTM will initiate Engineering Change Proposals (ECPs), technology refreshes to extend the system life and maintain interoperability and major product improvements, as well as initiate development of NOTM Airborne and NOTM Internally Transportable Vehicle variants.

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CTN will support Common Array Block-Expeditionary (CAB-E) Antenna Engineering Development Model (EDM) developmental and field testing, which is priority due to the CAB-E being the replacement for the current Compact Solid State Antenna (CSSA) that will become obsolete by FY 2018. CTN will also support Ground/Air Task-Oriented Radar (G/ATOR) Developmental Tests (DTs) and Operational Assessment (OA) to test its interoperability with G/ATOR, the TPS-59 Mode V antenna, and the Common Aviation Command and Control System (CAC2S).

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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2270: <i>Exp Indirect Fire Gen Supt Wpn Sys</i>	223.727	27.623	22.059	25.381	-	25.381	26.441	25.852	26.102	26.675	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Marine Air Ground Task Force (MAGTF) Command and Control (C2) Systems and Applications (MAGTF C2 SA) - MAGTF C2 SA merges the development, integration and testing of 45 existing C2 systems and applications into one common enterprise capability. They reside in all Combat Operations Centers (COCs) and related USMC C2 platforms. This effort provides greater economies of scale/affordability with system developers, technical design agents, integration agents and individual program offices. MAGTF C2 SA efforts are in alignment with the combat developers requirements for: Net-Centric systems, Development of reusable Open Architecture components, Data exposure, Enhancing the Warfighter's Situational Awareness and Increasing/Maximizing the Commander's decision space. The increase of \$2.744M from FY16 to FY17 will fund improvements and enhancements to Software Release 4.X, Marine Corps Enterprise Information Technology Services (MCEITS), and Marine Corps Software Resource Center (MCSRC).

Joint Battle Command - Platform (JBC-P) Family of Systems (FoS) - JBC-P FoS is an Army led ACAT II program of Joint Requirements Oversight Council (JROC) interest, formerly known as the Blue Force Tracker (BFT) FoS. It is comprised of L-Band SATCOM and is a digital, battle command information FoS that provides integrated, on the move, timely, relevant Command and Control Situational Awareness (C2SA) information to tactical combat, combat support and combat service support commanders, leaders, and key C2 nodes. JBC-P FoS will provide JROC mandated C2SA convergence across aircraft, ground vehicles and dismounted personnel. Increase of \$0.331M from FY16 to FY17 is to provide additional test and evaluation support for Handhelds.

Global Command and Control System - Tactical Command Operations System (GCCS-TCO) - GCCS-TCO is the principal tool within the Marine Air Ground Task Force (MAGTF) for situational awareness through distribution of the Common Tactical Picture (CTP). It supports tactical operations providing information via high speed computer systems in a timely manner and includes the Intel Operations Workstations/Servers. R&D funds provide science and technology advanced concepts to be applied to the system for an increase in functional capabilities to the warfighter, to include Joint Command and Control (JC2) development efforts within Tactical Service Oriented Architecture (TSOA). Decrease of \$1.081M from FY16 to FY17 reflects the program movement into the operations and sustainment phase.

Identity Dominance System-MC (IDS-MC) - IDS-MC is a multi-modal (fingerprint, iris and face) biometric collection system that provides the USMC a reliable and effective capability to collect, share, match, access, verify and store identity information. IDS-MC will enable the Marine to collect appropriate biometric, biographical and reference information on an individual and match this locally developed information with pre-existing information available to the expeditionary force. The system will display match results with linkage to the respective individual's biographical and reference information as well as help analyze the response, update records as appropriate, create reports and disseminate updated information in accordance with current MAGTF policy. The primary mission of IDS-MC is to provide the MAGTF with the means to identify persons encountered in the battle space. While IDS-MC is not an intelligence analysis system, it does provide identification information in support of military intelligence and law enforcement operations by providing positive identification of persons of interest. IDS-MC is an enabler in the areas of detainee management and questioning, base access, counterintelligence screening, border control, law enforcement, displaced persons' management and aiding in humanitarian

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assistance missions. IDS-MC supports the tactical application of identity dominance and fully supports a forward presence, crisis response and contingency response capability. Increase of \$0.181M from FY16 to FY17 will fund continuing software development and procure test articles for technology assessment for IDS-MC Increment 2.

Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS) - AFATDS FoS consists of three programs, AFATDS, Back Up Computer System (BUCS) and Mobile Tactical Shelter (MTS). The AFATDS automates the fire planning, tactical fire direction, and fire support coordination required to support maneuver from the sea and subsequent operations ashore. AFATDS integrates all supporting arms assets within the MAGTF such as mortars, cannon artillery, rockets and missiles, close air support, and naval surface fire support systems. BUCS is a hand-held computer system designed to provide a backup to the AFATDS in computing ballistic firing solutions, as well as provide survey and Meteorological functions in support of artillery. Additionally BUCS is the primary ballistic firing solution system during Ship To Objective Maneuver (STOM) and for the Expeditionary Fire Support System (EFSS). The MTS is a Lightweight Multi-purpose Shelter mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV) which protects both the AFATDS and operators from the environment. MTS enables rapid emplacement and displacement of fire support elements and provides networked communications on the move.

Target Hand-Off System (THS) - The THS addressed a Marine Corps operational requirement for a lightweight, handheld, and accurate target acquisition engagement coordination system. THS provides MAGTF Commanders with the only man-portable target location capability that allows Air Officers and Fire Support Coordinators to prosecute identified targets. The THS' advance interoperability capability provides the MAGTF Commander with the only portable target acquisition system able to interoperate with all target prosecution platforms available in the battlefield. The THS is designed for the Forward Air Controllers (FACs), Forward Observers (FOs), Fire Support Teams (FSTs), Firepower Control Teams (FCTs), Tactical Air Control Parties (TACPs) and Reconnaissance Teams to quickly acquire targets in day, night and near-all-weather visibility conditions, in order to conduct precise, rapid indirect surface fire support, Naval Surface Fire Support (NSFS) and Close Air Support (CAS).

Handheld Command and Control (H2C2) - H2C2 project vision outlines a collective and efficient mobile computing Acquisition Strategy to ensure economies of scale and scope. The H2C2 portfolio consists of two specific capabilities - secure wireless access to multiple networks and handheld communication platforms. The handheld capability provides low cost (commercially available) platforms (smartphones and tablets) for use on every network regardless of the operational environment. The emerging technologies will enable access to both classified and unclassified systems on a single device. The secure wireless capability enables Marines burdened by wired implementations an option to leverage wireless mediums. This capability provides wireless communication between a variety of devices.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: MAGTF C2: Product Development	10.764	5.340	7.198	0.000	7.198
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Completed Deployment of build 6 and initiate and deploy build 7, continued to improve and enhance MAGTF interoperability by reducing inefficiencies between disparate tactical data systems by linking them via the TSOA.					
-Continued presentation layer application development in conjunction with Warfighter input via the Agile Application Development (A2D) process.					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continued Select Command and Control Personal Computer (C2PC)/Joint Common Operational Picture Tactical Workstation (JTCW) application functionality to be transitioned into services hosted on the Tactical Service Oriented Architecture framework and C2 software packages.</p> <p>-Continued research and development to transfer legacy stove-piped MAGTF C2 systems and functionality to interoperable applications in order to create more efficient Joint and Coalition C2 environment for the MAGTF. JTCW support, development, improvement and transition to TSOA environment.</p> <p>-Completed deployment of the Marine Corps Software Resource on MCEITS.</p> <p>FY 2016 Plans:</p> <p>-Continue improving and enhancing MAGTF interoperability using the service oriented architecture provided by the TSOA. This greatly enhances the efficiency of data distribution between architecturally disparate tactical data systems.</p> <p>-Continue developing presentation layer applications in conjunction with Warfighter input using the Agile Application Development (A2D) process.</p> <p>-Complete transition of selected Command and Control Personal Computer (C2PC)/Joint Common Operational Picture Tactical Workstation (JTCW) application functionality into services hosted on the TSOA framework and C2 software packages.</p> <p>-Continue research and development for transfer of legacy stove-piped MAGTF C2 systems to modern interoperable applications resulting in a more efficient Joint and Coalition C2 environment for the MAGTF. Funding will provide for the development of one major release and one Rapid Response and Integration (R2I) application.</p> <p>FY 2017 Base Plans:</p> <p>-Continue the addition of Authoritative Data Sources from Intelligence, Logistics and Operations to the TSOA in order to meet identified Marine Corps gaps.</p> <p>-Continue improving and enhancing MAGTF interoperability using the service oriented architecture provided by the TSOA.</p> <p>-Continue developing applications for the Marine Corps Software Resource Center to enable more effective information sharing and the ability for Marines to make more informed and timely decisions.</p> <p>-Continue research and development for the deployment of the TSOA to additional Marine Corps platforms (NOTM and MCEITS).</p>					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- The increase of \$1.858M from FY16 to FY17 will fund improvements and enhancements to Software Release 4.X, Marine Corps Enterprise Information Technology Services (MCEITS), and Marine Corps Software Resource Center (MCSRC). FY 2017 OCO Plans: N/A					
Title: MAGTF C2: Support Costs FY 2015 Accomplishments: Continued system engineering support for system integration, configuration management and technical assessments. FY 2016 Plans: Continue system engineering support for system integration, configuration management and technical assessments. FY 2017 Base Plans: Continue system engineering support for system integration, configuration management and technical assessments. FY 2017 OCO Plans: N/A	1.649	1.022	1.208	0.000	1.208
Articles:	-	-	-	-	-
Title: MAGTF C2: Test and Evaluation FY 2015 Accomplishments: -Continued test support for the Joint Tactical Common Operational (COP) Workstation (JTCW). -Continued conducting developmental testing of JTCW and Joint interoperability testing in conjunction with the Joint Interoperability Test Command (JITC). -Continued to participate in technical working groups in support of test and engineering. -Continued to provide technical assistance to other programs supported by Marine Corps Tactical Systems Support Activity (MCTSSA) that involve the use of these systems as well as through the Operating forces Tactical Systems Support Center (OFTSSC) trouble calls. FY 2016 Plans:	1.068	1.000	1.425	0.000	1.425
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue test support for the Joint Tactical Common Operational (COP) Workstation (JTCW). -Continue conducting developmental testing of JTCW and Joint interoperability testing in conjunction with the Joint Interoperability Test Command (JITC). -Continue to participate in technical working groups in support of test and engineering. -Continue to provide technical assistance to other programs supported by Marine Corps Tactical Systems Support Activity (MCTSSA) that involve the use of these systems as well as through the Operating forces Tactical Systems Support Center (OFTSSC) trouble calls.</p> <p>FY 2017 Base Plans: -Continue test support for the Joint Tactical Common Operational (COP) Workstation (JTCW). -Continue conducting developmental testing of JTCW and Joint interoperability testing in conjunction with the Joint Interoperability Test Command (JITC). -Continue to participate in technical working groups in support of test and engineering. -Continue to provide technical assistance to other programs supported by Marine Corps Tactical Systems Support Activity (MCTSSA) that involve the use of these systems as well as through the Operating forces Tactical Systems Support Center (OFTSSC) trouble calls.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: MAGTF C2: Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to receive software engineering support to provide appropriate government direction in design and development of software, conduct of source code reviews and prime vendor oversight from Federally Funded Research and Development Center (FFRDC).</p> <p>FY 2016 Plans: Continue to receive software engineering support to provide appropriate government direction in design and development of software, conduct of source code reviews and prime vendor oversight from Federally Funded Research and Development Center (FFRDC).</p> <p>FY 2017 Base Plans:</p>	0.518	1.000	1.275	0.000	1.275
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue to receive software engineering support to provide appropriate government direction in design and development of software, conduct of source code reviews and prime vendor oversight from Federally Funded Research and Development Center (FFRDC). FY 2017 OCO Plans: N/A					
Title: GCCS-TCO: Product Development Articles:	0.441 -	0.650 -	0.000 -	0.000 -	0.000 -
FY 2015 Accomplishments: - Continued the development of services linking the COP from GCCS-TCO to other COP viewing tools as a service inside the Combat Operations Center (COC). - Continued to improve interoperability allowing COP and Situational Awareness data to be shared between GCCS-TCO and other C2 systems. FY 2016 Plans: - Complete the development of services linking the COP from GCCS-TCO to other COP viewing tools as a service inside the Combat Operations Center. The GCCS-TCO software will improve interoperability with the Tactical Service Oriented Architecture, allowing COP and Situational Awareness data to be shared between the GCCS-TCO and other C2 systems. FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: GCCS-TCO: Test and Evaluation Articles:	0.260 -	0.431 -	0.000 -	0.000 -	0.000 -
FY 2015 Accomplishments: Continued testing and validation of advanced concepts and technologies. FY 2016 Plans: Complete testing and validation of advanced concepts and technologies. FY 2017 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2017 OCO Plans: N/A					
Title: AFATDS: Software Development and Integration	3.721	3.743	5.986	0.000	5.986
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Initiated development of 6.8.1.1, adding USMC capabilities and interface enhancements with other C2 systems. -Initiate interoperability testing for AFATDS and Back Up Computer System (BUCS) (Centaur and Sensor Programs) software.					
FY 2016 Plans: -Initiate development of 7.0, adding USMC capabilities and interface enhancements with other C2 systems. -Initiate interoperability testing for AFATDS and BUCS (Centaur and Sensor Programs) software.					
FY 2017 Base Plans: -Increase of \$2.243M will support enhancement of software version 6.8.1.2 and continued development of AFATDS 7.0.					
FY 2017 OCO Plans: N/A					
Title: AFATDS: Test and Evaluation	0.000	0.246	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Initiate interoperability testing for AFATDS and BUCS software					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Title: THS: Product Development	2.812	2.843	2.273	0.000	2.273

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Initiated integration and continued development of government owned software to incorporate THS capability requirements into a software application to replace the current fielded system.</p> <p>FY 2016 Plans: -Continue capability requirements analysis and validation and conduct analysis of future interoperability and capability requirements. -Initiate development of emerging requirements and incorporate software patches to improve interoperability.</p> <p>FY 2017 Base Plans: -Complete development of the first software version to support fielding and replace THS V1.2, which will be obsolete and unsupported after FY17. Funds will also be used to begin the development of the next iteration of THS software.</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: THS: Testing and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Completed testing of software version SL V1.2 and the Slate systems.</p> <p>FY 2016 Plans: -Continue interoperability testing of software on new hardware configuration -Initiate and conduct Information Assurance Vulnerability Assessment (IAVA) activities.</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.566 -	0.295 -	0.000 -	0.000 -	0.000 -
<p>Title: THS: Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	0.536 -	0.000 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue Federally Funded Research and Development Center (FFRDC) engineering support to conduct capability requirements analysis and validation. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: JBC-P: Software and Product Development/Integration Articles:	0.671 -	1.190 -	0.930 -	0.000 -	0.930 -
FY 2015 Accomplishments: -Continued the coordination with the software and product development teams to assist in the development and integration of the JBC-P and handheld/end user device (EUD) software capability and associated testing. -Continued software engineering support to provide appropriate government direction in design and development of software. Support provided to assist and serve as subject matter experts in this effort. Existing documentation and logistics support will be analyzed for supportability of JBC-P and follow on increments of the capability. FY 2016 Plans: -Continue coordination with the software and product development teams to assist in the development and integration of the JBC-P and handheld/end user device (EUD) software capability and associated testing. -Continue software engineering support to provide appropriate government direction in design and development of software. Existing documentation and logistics support will be analyzed for supportability of JBC-P and follow on increments of the capability. FY 2017 Base Plans: -Continue coordination with the software and product development teams to assist in the development and integration of the JBC-P and handheld/end user device (EUD) software capability and associated testing.					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue software engineering support to provide appropriate government direction in design and development of software. Existing documentation and logistics support will be analyzed for supportability of JBC-P and follow on increments of the capability.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: JBC-P: Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Continued laboratories integration to facilitate test and network integration test events. -Continue support for developmental test (DT) and planning/support for operational test (OT) of JBC-P handheld device. -Continued information assurance activities to support certification and accreditation efforts of JBC-P software. -Purchased 82 EUD to support test and demonstrations events.</p> <p>FY 2016 Plans: -Continue laboratories integration to facilitate test and network integration test events. -Continue support for developmental test (DT) and planning/support for operational test (OT) of the JBC-P handheld device.</p> <p>FY 2017 Base Plans: -Continue laboratories integration to facilitate test and network integration test events. -Continue support for developmental test (DT) and planning/support for operational test (OT) of the JBC-P handheld device.</p> <p>FY 2017 OCO Plans: N/A</p>	2.286	1.335	2.006	0.000	2.006
	-	-	-	-	-
<p>Title: JBC-P: Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Continued to provide Engineering Support personnel and travel.</p> <p>FY 2016 Plans:</p>	0.536	0.390	0.310	0.000	0.310
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue to provide Engineering Support personnel and travel.</p> <p>FY 2017 Base Plans: -Continue to provide Engineering Support personnel and travel.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: IDS-MC: Product Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Continue software development and hardware integration including information assurance and cyber-security certification and accreditation. Continue system engineering and network integration of emerging requirements.</p> <p>FY 2017 Base Plans: Continue software development and hardware integration including information assurance and cyber-security certification and accreditation. Continue system engineering and network integration of emerging requirements. Initiate capability requirements analysis and initiate development for IDS-MC increment 2</p> <p>FY 2017 OCO Plans: N/A</p>	0.000 -	0.400 -	0.900 -	0.000 -	0.900 -
<p>Title: IDS-MC: Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Supported software integration and network engineering and integration including information assurance and cyber-security certification and accreditation.</p> <p>FY 2016 Plans: Continue software development support and hardware integration including information assurance and cyber-security certification and accreditation. Continue system engineering and network integration support for emerging requirements.</p> <p>FY 2017 Base Plans:</p>	0.422 -	0.447 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue software development support and hardware integration including information assurance and cyber-security certification and accreditation. Continue system engineering and network integration support for emerging requirements. Initiate capability requirements analysis and initiate development for IDS-MC increment 2</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: IDS-MC: Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Initiate Engineering Change proposal testing IDS-MC Increment 2 technology demonstrations which includes purchasing hardware test articles for technology assessment for IDS-MC Increment 2.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000 -	0.000 -	0.128 -	0.000 -	0.128 -
<p>Title: H2C2: Integration Engineering</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Initiated development, design, test and integration of various emerging capabilities across the H2C2 portfolio. -Initiated support for sustained engagement with various industry providers, quick look technology excursions, and experimentation demonstrations for high risk emerging technology.</p> <p>FY 2016 Plans: -Continue to develop, design, test, and integrate various emerging capabilities across the H2C2 portfolio. -Continue to provide support for sustained engagement with various industry providers, quick look technology excursions, and experimentation demonstrations for high risk emerging technology.</p> <p>FY 2017 Base Plans: -Continue to develop, design, test, and integrate various emerging capabilities across the H2C2 portfolio.</p>	1.373 -	1.727 -	1.742 -	0.000 -	1.742 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2270 / <i>Exp Indirect Fire Gen Supt Wpn Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue to provide support for sustained engagement with various industry providers, quick look technology excursions, and experimentation demonstrations for high risk emerging technology. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	27.623	22.059	25.381	0.000	25.381

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/6468AA: <i>GCCS-TCO</i>	0.108	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.219
• PMC/6438BB: <i>IDS-MC</i>	1.637	1.183	0.496	-	0.496	0.497	1.001	1.021	1.041	Continuing	Continuing
• PMC/4631CC: <i>GCCS-TCO</i>	0.040	7.156	6.005	-	6.005	3.264	4.666	7.262	9.501	Continuing	Continuing
• PMC/4631DD: <i>AFATDS</i>	1.769	2.722	2.826	-	2.826	15.520	15.244	15.562	15.865	Continuing	Continuing
• PMC/4631FF: <i>JBC-P</i>	2.627	12.552	34.558	-	34.558	29.740	8.421	8.593	8.760	Continuing	Continuing
• PMC/4631GG: <i>THS</i>	6.320	4.001	0.000	-	0.000	0.000	2.391	2.440	2.487	Continuing	Continuing

Remarks

D. Acquisition Strategy
MAGTF C2 SA: MAGTF C2 SA is delivering command and control capabilities through bi-annual software releases with an initial release in FY15 through multiple programs of record. In FY16 there will be multiple releases to modernize the service oriented infrastructure and pull in more services from Authoritative Data Sources. In FY17 there will be multiple releases to pull in more services and deploy to additional platforms beyond the Combat Operations Center. Currently the initial focus is developing the Tactical Service Oriented Architecture (TSOA) software, which provides a common software infrastructure through which services and applications from other programs of record can begin the process of interfacing with in order to maximize software commonality across echelons and missions. The long term goal is a software capability that will enable data discovery and data sharing across mission areas, a common standards-based viewer, core services and applications, and access to the Global Information Grid (GIG) and other Joint networks, data and services.

JBC-P: JBC-P FoS is leveraging the Army's development of the JBC-P and handheld software, and the Marine Corps' program is contingent upon the Army's development and acquisition strategy. The Army will fund research and development for JBC-P unless there are Service unique requirements, which the Marine Corps program office will fund. The Marine Corps' program office will participate in all design and readiness reviews and joint operational testing events.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2270 / <i>Exp Indirect Fire Gen Supt Wpn Sys</i>
<p>GCCS-TCO: Contracting is performed with various vendors for software test and integration, Commercial-Off-The-Shelf (COTS) evaluation and documentation to develop advanced concepts and additional functional capabilities. The Program Management Office conducts quarterly performance reviews. Specific hardware is also procured for test purposes which include environmental, shock, compatibility, and interoperability testing.</p> <p>Identity Dominance System (IDS): Currently, the IDS-MC Program Office acquisition strategy is to leverage the Navy's IDS Program and provide funding to meet Marine Corps requirements. The Marine Corps' program office will participate in all design and technical reviews as well as the FOT&E activities. The long-term goal is to equip the Marine with a user-friendly biometric authentication technology that will be employed throughout DoD to deny the enemy freedom of movement within the populace and positively identify known insurgents within an Area of Responsibility (AOR). R&D efforts will be a combined effort between the S/W developers (Aware), the Navy PM and the USMC for S/W enhancement for the next planned increments of IDS-MC and for the quarterly updates.</p> <p>AFATDS: AFATDS is managed through Army CECOM, Aberdeen Proving Ground, MD. R&D efforts for the next AFATDS version will be a combined effort between the software developer, the Army PM, and the USMC for software enhancements through DISA. Current software enhancements are performed at Army, Ft. Sill, OK.</p> <p>THS: The acquisition of components (software/hardware) for the THS initiative will maximize the use of existing COTS, Government-Off-The-Shelf (GOTS), Non-Developmental Item (NDI), and Government Furnished Equipment (GFE). Software is transitioning to a government owned baseline. Software must maintain compatibility with five Programs of Record (POR) and seven Operational Flight Programs (OFP).</p> <p>H2C2: H2C2 will use an evolutionary approach for technology insertion. The approach will leverage and mature COTS and NDI technologies to rapidly transition a handheld data capability to other acquisition programs. H2C2 inserts mature technology into existing programs in order to fill capability gaps and requirement shortfalls. These technologies will be inserted at different times along gaining program acquisition cycles. This strategy will apply to available technology at different proposed technology insertion points for each gaining program.</p> <p>E. Performance Metrics Milestone Reviews</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems				Project (Number/Name) 2270 / Exp Indirect Fire Gen Supt Wpn Sys							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	C/CPFF	MCTSSA : Camp Pendleton, CA	0.000	0.200	Jan 2015	0.000		0.000		-		0.000	0.000	0.200	-
MAGTF C2	C/CPFF	Northrop Grumman : Washington, DC	0.000	1.850	Sep 2015	0.000		0.000		-		0.000	0.000	1.850	-
MAGTF C2	C/CPFF	SPAWAR : Charleston, SC	44.671	2.895	May 2015	1.217	Mar 2016	1.598	Jan 2017	-		1.598	Continuing	Continuing	Continuing
MAGTF C2	WR	NSWC : Panama City, FL	0.736	0.000		0.250	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing
MAGTF C2	WR	NSWC : Dahlgren, VA	7.597	1.941	Jan 2015	1.500	Feb 2016	1.800	Nov 2016	-		1.800	Continuing	Continuing	Continuing
MAGTF C2	C/CPFF	SPAWAR : San Diego, CA	3.111	1.121	Jan 2015	1.123	Mar 2016	1.000	Dec 2016	-		1.000	Continuing	Continuing	Continuing
MAGTF C2	WR	SSC A : Charleston, SC	3.179	2.164	Nov 2014	1.250	Feb 2016	1.800	Nov 2016	-		1.800	Continuing	Continuing	Continuing
MAGTF C2	WR	ARL : Washington, DC	0.650	0.333	May 2015	0.000		0.700	Nov 2016	-		0.700	Continuing	Continuing	Continuing
MAGTF C2	C/CPFF	NSWC2 : Dahlgren, VA	0.000	0.260	May 2015	0.000		0.300	Jan 2017	-		0.300	Continuing	Continuing	Continuing
GCCS-TCO	C/CPFF	SPAWAR : Charleston, SC	5.250	0.441	Jul 2015	0.650	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
AFATDS	MIPR	PM Mission Cmd (Army) : Aberdeen Proving Ground, MD	27.919	3.721	Jan 2015	3.743	Jan 2016	0.000		-		0.000	0.000	35.383	-
AFATDS	MIPR	DISA : Belleville, IL	0.000	0.000		0.000		4.486	Mar 2017	-		4.486	Continuing	Continuing	Continuing
AFATDS	MIPR	Army/SEC : Fort Sill, OK	0.000	0.000		0.000		1.500	Mar 2017	-		1.500	Continuing	Continuing	Continuing
THS	SS/CPFF	Stauder Tech : St. Louis, MO	23.769	0.000		1.250	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
THS	C/CPFF	MCSC : Quantico, VA	0.000	0.000		1.313	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
THS	WR	NSWC : Dahlgren, VA	0.000	0.380	Nov 2014	0.280	Nov 2015	0.000		-		0.000	0.000	0.660	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2270 / Exp Indirect Fire Gen Supt Wpn Sys
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
THS	MIPR	AMRDEC : Huntsville, AL	0.000	2.432	Mar 2015	0.000		2.273	Jan 2017	-		2.273	Continuing	Continuing	Continuing
JBC-P	WR	SPAWAR : Charleston, SC	2.711	0.279	Feb 2015	0.490	Feb 2016	0.444	Dec 2016	-		0.444	Continuing	Continuing	Continuing
JBC-P	C/CPFF	SPAWAR2 : Charleston, SC	0.193	0.193	Jun 2015	0.700	Feb 2016	0.271	Dec 2016	-		0.271	Continuing	Continuing	Continuing
JBC-P	WR	NSWC : Crane, IN	0.000	0.199	Apr 2015	0.000		0.215	Nov 2016	-		0.215	Continuing	Continuing	Continuing
IDS-MC	MIPR	NAVSEA/PMS-408 : Washington, DC	1.971	0.000		0.400	Apr 2016	0.900	Nov 2016	-		0.900	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	64.782	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			186.539	18.409		14.166		17.287		-		17.287	-	-	-

Remarks
 IDS FY16: IDS-MC will utilize NAVSEA/PMS408 to provide software development, information assurance updates and engineering change proposals in support of USMC requirements.
 IDS FY17: IDS-MC will utilize NAVSEA/PMS 408 to provide Lab support and test articles for technology assessment for IDS-MC increment 2 or technology refresh.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MAGTF C2	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.754	Dec 2014	0.000		0.000		-		0.000	0.000	0.754	-
MAGTF C2	WR	SPAWAR : San Diego, CA	3.031	0.895	Jun 2015	1.022	Feb 2016	1.208	Nov 2016	-		1.208	Continuing	Continuing	Continuing
H2C2 Integration Eng	WR	SPAWAR : Charleston, SC	0.000	1.192	Jan 2015	1.053	Feb 2016	0.937	Jan 2017	-		0.937	Continuing	Continuing	Continuing
H2C2 Integration Eng	C/FFP	SPAWAR : Charleston, SC	0.000	0.181	Jan 2015	0.674	Feb 2016	0.295	Jan 2017	-		0.295	Continuing	Continuing	Continuing
H2C2 Integration Eng	WR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.510	Nov 2016	-		0.510	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2270 / Exp Indirect Fire Gen Supt Wpn Sys
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IDS-MC	WR	NSWC Dahlgren : Dahlgren, VA	2.678	0.043	Apr 2015	0.447	Jan 2016	0.000		-		0.000	0.000	3.168	-
IDS-MC	C/FFP	COTF2 : Norfolk, VA	0.000	0.031	Jun 2015	0.000		0.000		-		0.000	0.000	0.031	-
IDS-MC	C/FFP	SPAWAR : Charleston, SC	0.000	0.036	Apr 2015	0.000		0.000		-		0.000	0.000	0.036	-
IDS-MC	C/FFP	SPAWAR2 : Charleston, SC	0.000	0.014	Nov 2015	0.000		0.000		-		0.000	0.000	0.014	-
IDS-MC	WR	NSWC Dahlgren2 : Dahlgren, VA	0.000	0.200	Jun 2015	0.000		0.000		-		0.000	0.000	0.200	-
IDS-MC	C/FFP	NAVSEA-PMS408 2 : Washington-DC	0.000	0.069	Sep 2015	0.000		0.000		-		0.000	0.000	0.069	-
IDS-MC	C/FFP	COTF : Norfolk, VA	0.000	0.029	May 2015	0.000		0.000		-		0.000	0.000	0.029	-
Prior Years Cumulative Funding	Various	Various : Various	5.666	0.000		0.000		0.000		-		0.000	0.000	5.666	-
Subtotal			11.375	3.444		3.196		2.950		-		2.950	-	-	-

Remarks
IDS FY15-FY16: IDS-MC will utilize NSWC Dahlgren to provide engineering support, research studies, validation and verification of software and engineering change proposals.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MAGTF C2	WR	MCTSSA : Camp Pendleton, CA	0.000	0.095	Jun 2015	0.000		0.000		-		0.000	0.000	0.095	-
MAGTF C2	WR	NRL : Washington, DC	1.409	0.674	Nov 2014	0.250	Feb 2016	0.825	Nov 2016	-		0.825	Continuing	Continuing	Continuing
MAGTF C2	C/FFPLOE	MCTSSA : Camp Pendleton, CA	1.842	0.299	Apr 2015	0.750	Mar 2016	0.600	Dec 2016	-		0.600	Continuing	Continuing	Continuing
GCCS-TCO	C/CPFF	SSC-Lant : Charleston, SC	1.282	0.213	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

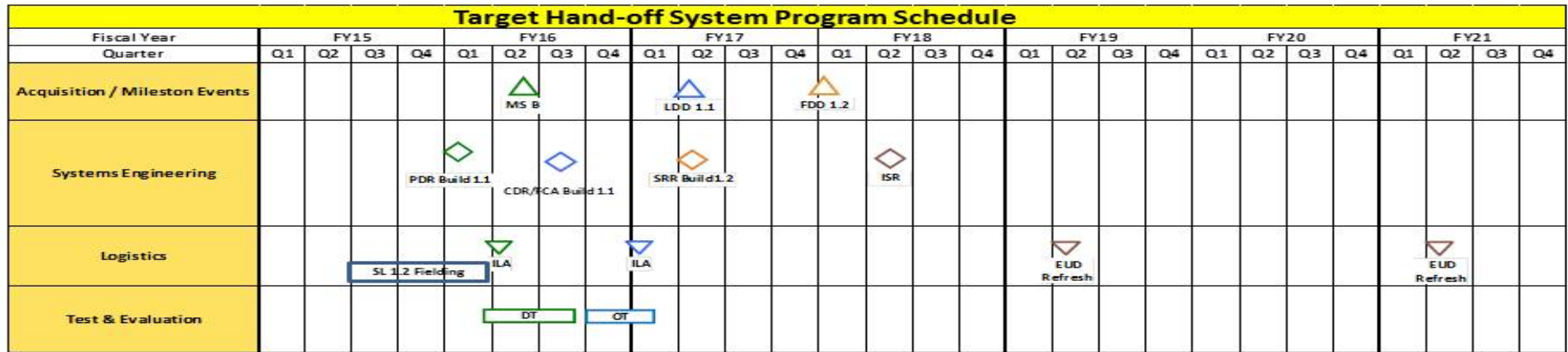
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2270 / Exp Indirect Fire Gen Supt Wpn Sys
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GCCS-TCO	MIPR	DISA/JITC : Ft. Huachuca, AZ	0.675	0.047	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GCCS-TCO	WR	SPAWAR : Charleston, SC	0.017	0.000		0.431	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
AFATDS	WR	SPAWAR : Charleston, SC	2.986	0.000		0.246	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
THS	MIPR	DISA/JITC : Ft. Huachuca, AZ	0.488	0.201	Feb 2015	0.035	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
THS	WR	NSWC : Dahlgren, VA	0.000	0.000		0.260	Nov 2015	0.000		-		0.000	0.000	0.260	-
THS	WR	NSWC : Crane, IN	0.000	0.365	Oct 2014	0.000		0.000		-		0.000	0.000	0.365	-
JBC-P	C/CPFF	MCTSAA : Camp Pendleton, CA	0.445	0.534	Nov 2014	0.400	Feb 2016	0.380	Nov 2016	-		0.380	Continuing	Continuing	Continuing
JBC-P	WR	SPAWAR : Charleston, SC	1.654	0.000		0.235	Feb 2016	0.271	Dec 2016	-		0.271	Continuing	Continuing	Continuing
JBC-P	MIPR	DISA/JITC : Ft. Huachuca, AZ	0.130	0.000		0.105	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
JBC-P	C/CPFF	MCOTEA : Quantico, VA	1.040	0.000		0.080	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
JBC-P	WR	NSWC : Crane, IN	0.663	1.082	Oct 2014	0.515	Feb 2016	1.197	Nov 2016	-		1.197	0.000	3.457	-
JBC-P	C/CPFF	NSWC2 : Crane, IN	0.000	0.136	Dec 2014	0.000		0.158	Dec 2016	-		0.158	0.000	0.294	-
JBC-P	C/CPFF	PMSWAR : Fort Belvoir, VA	0.000	0.534	Apr 2015	0.000		0.000		-		0.000	0.000	0.534	-
IDS-MC	WR	NSWC : Crane, IN	0.000	0.000		0.000		0.128	Nov 2016	-		0.128	0.000	0.128	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	6.335	0.000		0.000		0.000		-		0.000	0.000	6.335	-
Subtotal			18.966	4.180		3.307		3.559		-		3.559	-	-	-

Remarks
IDS FY17: NSWC Crane Lab support for ECP testing of Software Changes.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2270 / Exp Indirect Fire Gen Supt Wpn Sys



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2270 / Exp Indirect Fire Gen Supt Wpn Sys

Joint Battle Command Platform (JBC-P) FoS Program Schedule

Fiscal Year	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Quarter		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Milestone/ Fielding Decisions	★ Tanks FD	△ MFOCS Procurement ★ ABV (28) FD ★ M88 (92) FD ★ HMMWV (6064) FD (Apr)	★ Transition to JBC-P ★ AAV (815) FD ★ MTVR (1684) FD	★ JLTV ★ LAV (571) FD ★ MATV (31) FD ★ LVSr (499) FD	★ MRAP (82) FD ★ HIMARS (134) FD ★ MANPADS (128) FD		
Fielding JCR, JBC-P/MFoCS	Inc I TOC Fielding Tanks Fielding	ABV M88 HMMWV fielding (13mo) A&B	AAV fielding (10mo) A&B MTVR fielding (21mo) B	LAV fielding (7.5mo) B	LVSr fielding(8.5mo) A&B MANPADS fielding MATV MRAP fielding HIMARS fielding		
Systems Engineering	JBC-P Build 6	MFOCS /JCR ECP TRR 1.6.0.5 JBC-P 1.6.0.5 RTM PESHE REIR/PEIR submission	JBC-P SW ECP SVR JBC-P SW REIR/PEIR submission	REIR/PEIR submission	Technical Refresh FBCB2/JCR/JVS to JBC-P/MFoCS II MEF REIR/PEIR submission PESHE Update	I MEF	III MEF
Test and Evaluation	Inc I JITC	MFOCS test asset delivery MFOCS Demonstration Test with JCR 1.3.2 JBC-P 1.6.0.5 Development Test JBC-P 1.6.0.5 Mediation Test w/ JVS & MFOCS Mediation Services Report JCR 1.3.2 JITC MCT Reexpression Test JCR COMMEM	JBC-P New Version SW Testing	JBC-P New Version SW Testing	JBC-P New Version SW Testing	JBC-P New Version SW Testing	JBC-P New Version SW Testing
Software Deliveries	JCR 1.3.2 sw drop	JBC-P 1.6.0.5 sw drop JBC-P 1.7.0 sw drop JBC-P Build 1.7.0 NIE 17.1 NIE 17.2	JBC-P New Version SW Drop	JBC-P New Version SW Drop	JBC-P New Version SW Drop	JBC-P New Version SW Drop	JBC-P New Version SW Drop
Logistics	Inc I VMS LA Tanks Fielding Conf	ABV ILA M88 ILA HMMWV ILA	AAV ILA MTVR ILA	LAV ILA MATV ILA	LVSr ILA MRAP ILA MANPADS ILA HIMARS ILA	JCR Sustainment JBC-P Sustainment	
Contracting	BAH LCCE Prg Supt NSWC Safety	MCTSSA Supt Safety Supt MFOCS D&F MFOCS Award	MCTSSA Supt Safety Supt Prg Supt MFOCS Award	MCTSSA Supt Safety Supt Prg Supt MFOCS Award	MCTSSA Supt Safety Supt Prg Supt MFOCS Award	MCTSSA Supt Safety Supt Prg Supt	MCTSSA Supt Safety Supt Prg Supt
Information Assurance	Inc I FISMA Inc I ATO	Inc II FISMA Inc II ATO Inc I ATO Reaccreditation		Inc II ATO Reaccreditation	Inc I ATO Reaccreditation		Inc II ATO Reaccreditation

As of: 30-Dec-15

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

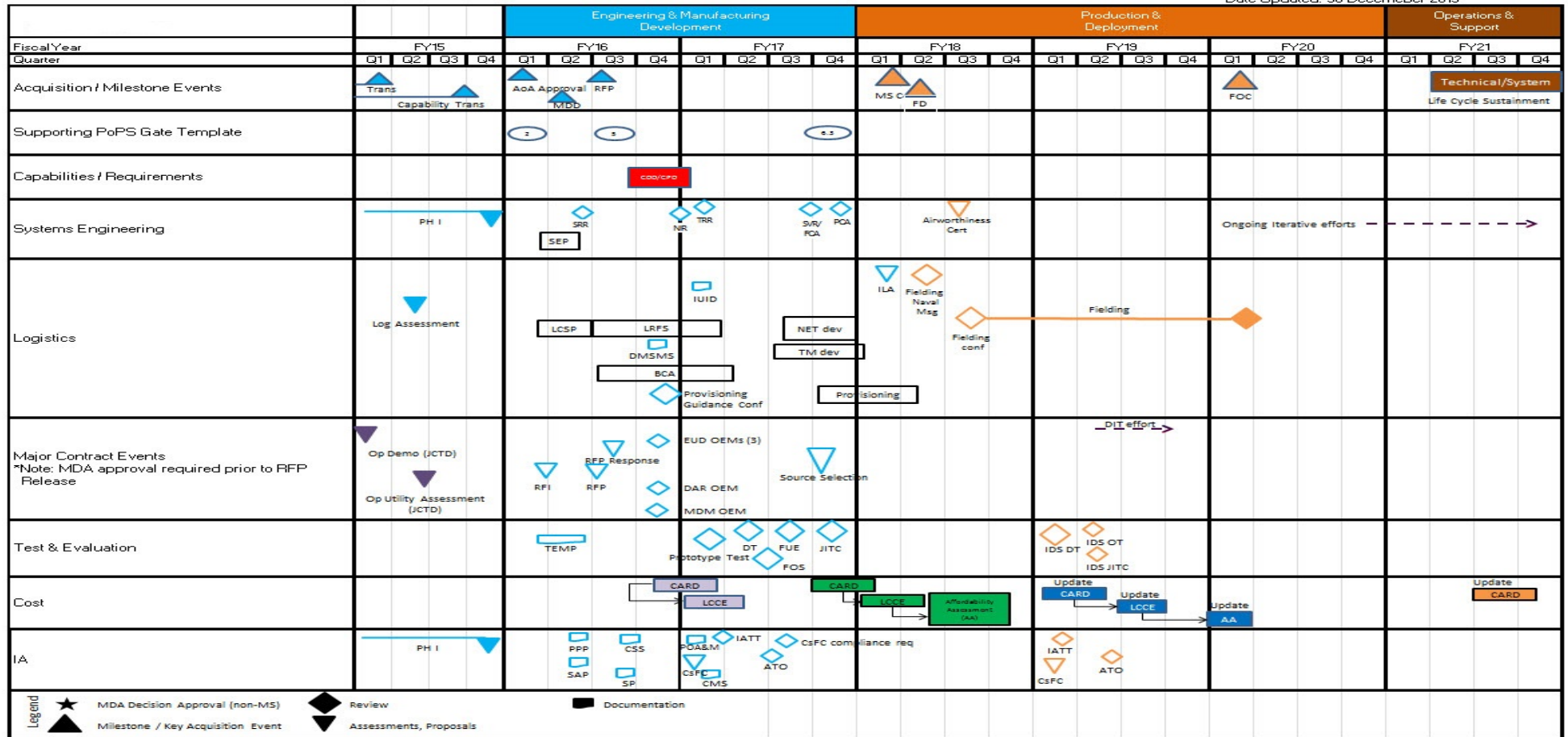
Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2270 / Exp Indirect Fire Gen Supt Wpn Sys

Handheld Command and Control (H2C2) Program Schedule

Date Updated: 30 December 2015



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

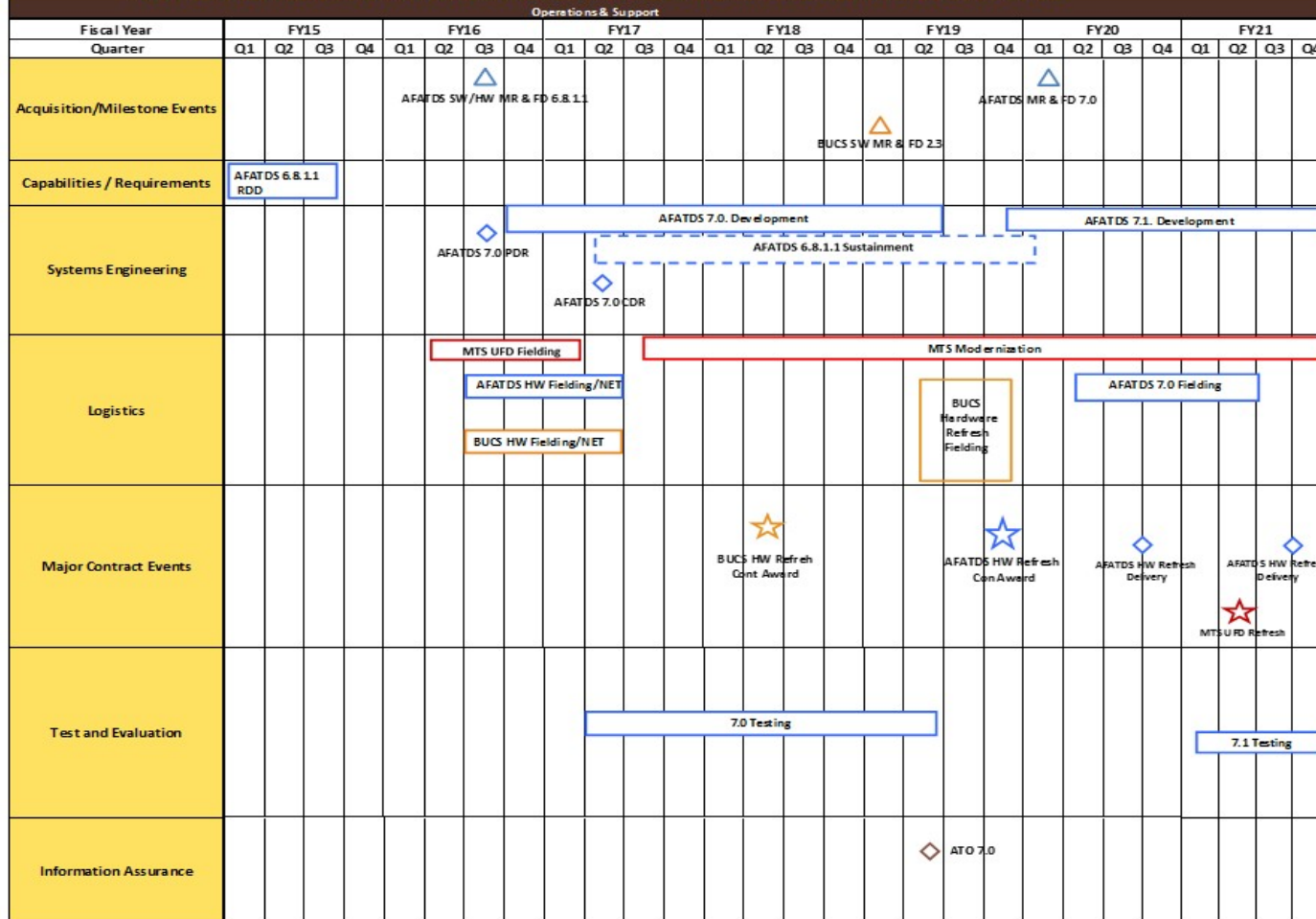
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2270 / Exp Indirect Fire Gen Supt Wpn Sys

Advanced Field Artillery Tactical Data System (AFATDS) Family of Systems (FoS) Schedule



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

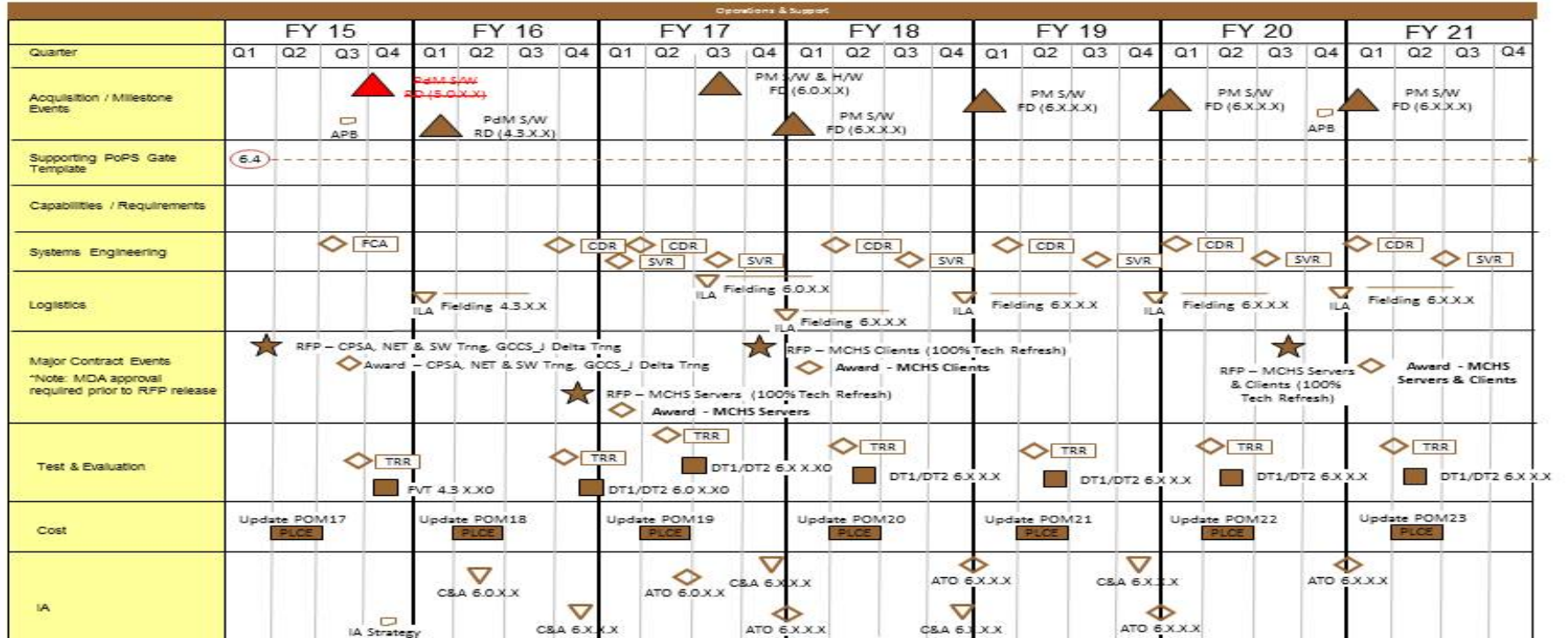
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2270 / Exp Indirect Fire Gen Supt Wpn Sys

GCCS- TCO SCHEDULE



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

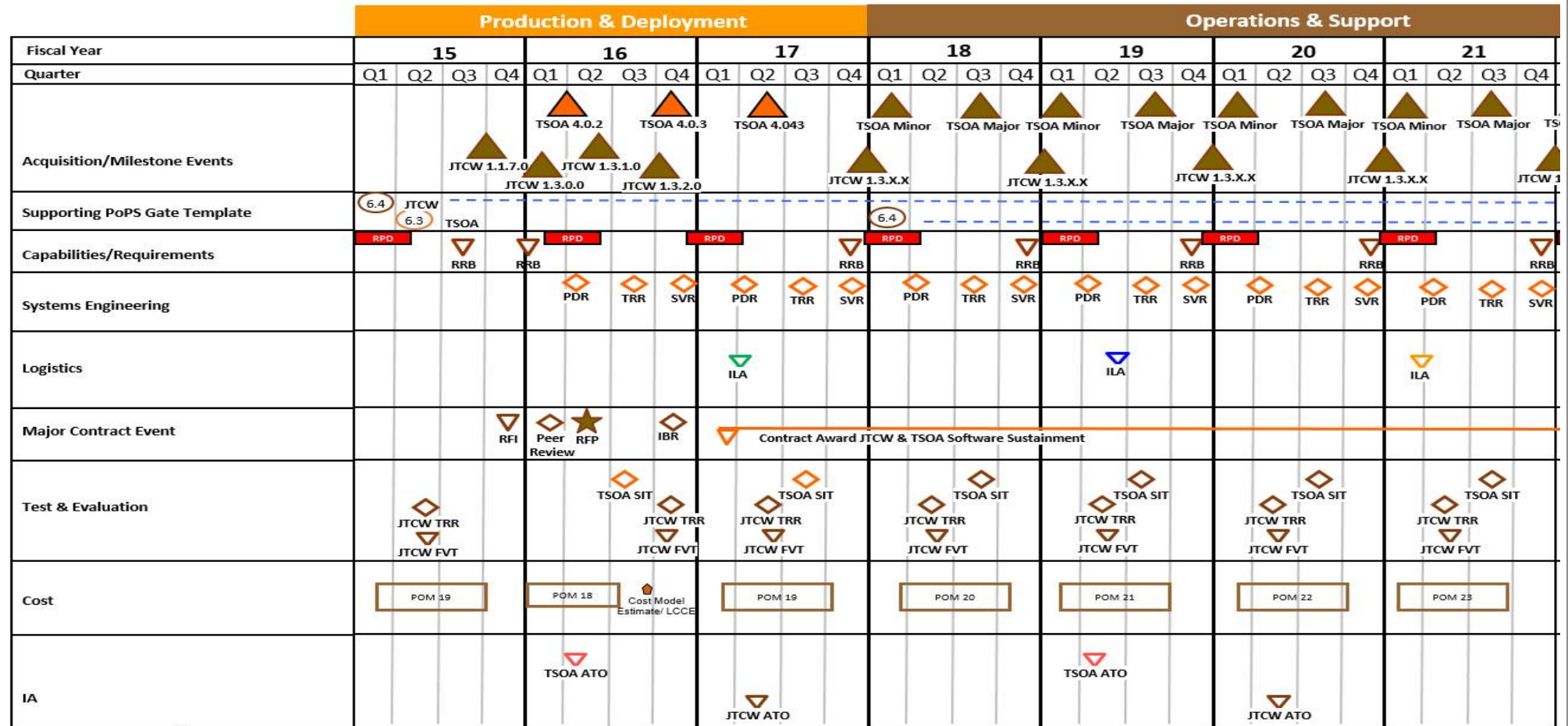
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2270 / Exp Indirect Fire Gen Supt Wpn Sys

MAGTF C2 Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2270 / <i>Exp Indirect Fire Gen Supt Wpn Sys</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2270				
MAGTF C2 JTCW MDA Review	4	2015	4	2015
MAGTF C2 TSOA MDA Review	4	2016	4	2016
MAGTF C2 TSOA SIT	3	2017	3	2017
GCCS-TCO SW RD (4.3.X.X)	1	2016	1	2016
GCCS TCO RFP	4	2016	4	2016
GCCS-TCO SW/HW FD (6.0.0.0)	3	2017	3	2017
GCCS TCO MCHS SERVERS AWARD	1	2017	1	2017
AFATDS 7.0 Software Development	4	2016	2	2019
AFATDS BUCS Fielding	3	2016	2	2017
AFATDS HW Fielding	3	2016	2	2017
AFATDS Critical Design Review	2	2017	2	2017
AFATDS 7.0 Testing	2	2017	2	2019
THS - THS V2 Milestone B	2	2016	2	2016
THS - THS V2 Final Deployment	1	2018	2	2018
JBC-P FoS Inc I Platform Fielding Decision- ABV	2	2016	2	2016
JBC-P FoS Inc I Platform Fielding Decision- M88	2	2016	2	2016
JBC-P FoS Inc I Platform Fielding Decision-HMMWV	3	2016	3	2016
H2C2 DT	2	2017	2	2017
H2C2 FUE	3	2017	3	2017
IDS-MC Milestone C	4	2015	4	2015
IDS-MC Developmental Testing (DT) 1	3	2015	3	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IDS-MC DevelopmentalTesting (DT) 2	4	2015	1	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems				Project (Number/Name) 2273 / Air Ops Cmd & Control (C2) Sys			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2273: Air Ops Cmd & Control (C2) Sys	405.175	8.070	7.713	11.946	-	11.946	11.571	11.762	12.026	12.333	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 582												

Note

Funding for the Common Aviation Command and Control System (CAC2S) program was moved to PE 0206335M Common Aviation Command and Control System (CAC2S), Project 3373 beginning in FY15. Prior Year funding is located in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Ops Cmd & Control (C2) Systems.

The FY 2017 funding request was reduced by \$0.500 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Theater Battle Management Core System (TBMCS) - Joint mandated Air War planning tool for the generation, dissemination and execution of the Air Tasking Order (ATO). TBMCS is an Air Force led program, which provides the automated tools necessary to manage tactical air operations, execute area air defense and airspace management in the tactical area of operation, and coordinate operations with components of other military services. TBMCS is located at the Tactical Air Command Center (TACC), with remotes located throughout the area of operation. It is scalable, allowing for joint, coalition and service specific operations. It is an evolutionary acquisition program. Increase from FY16 to FY17 of \$1.376M funds development and test and evaluation of USMC developed software releases that support the software baseline for Cyber Security upgrades as well as Cyber Security Accreditation.

Composite Tracking Network (CTN) - Provides a ground based sensor netting solution that significantly improves situational awareness by correlating sensor measurement data (target position, speed, heading, Identification Friend and Foe (IFF), etc.) from local and remote radars in the Cooperative Engagement Capability (CEC) network. This data is then provided to the warfighter in the form of composite, real-time, air surveillance tracks to the Marine Air Command and Control node and is integral in providing an accurate representation of the airspace to reduce ground to air and air to air fratricide, facilitate more effective integration of air and surface fires, extend the air defensive capability of the Naval force in the littorals and enable integrated fire control (IFC) for the Marine Corps. The funding increase from FY16 to FY17 of \$3.273M is to support Common Array Block-Expeditionary (CAB-E) Antenna Engineering Development Model (EDM) developmental and field testing, which is priority due to the CAB-E being the replacement for the current Compact Solid State Antenna (CSSA) that will become obsolete by FY 2018. The increase also is for CTN to support Ground/Air Task-Oriented Radar (G/ATOR) Developmental Tests (DTs) and Operational Assessment (OA) to test its interoperability with G/ATOR, the TPS-59 Mode V antenna, and the Common Aviation Command and Control System (CAC2S).

The Marine Air Command and Control System (MACCS) Sustainment - Consists of various command and control agencies designed to provide the Aviation Combat Element (ACE) commander with the ability to monitor, supervise and influence the application of Marine aviation assets in support of Air/Ground operations. The

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>
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MACCS Sustainment provides funding to keep these fielded systems ready, relevant and capable until their functions are replaced by the Common Aviation Command and Control System (CAC2S).

Combat Operations Center (COC) - AN/TSQ-239 (V)1/2/3/4 are a deployable, self-contained, modular, centralized and scalable facility ((V)1 MEF-size, (V)2 MSC/ Div-size, (V)3 Regiment-size, (V)4 Battalion-size) which provides digital, shared Command and Control/Situational Awareness functionalities to enhance the Common Operational Picture (COP) for the Command Element, Ground Command Element, Air Combat Element, and Logistics Combat Element. It is a commercial-off-the-shelf integrated hardware solution using unit provided radios, re-hosted tactical data systems, and available Marine Corps prime movers to transport the system. Funds support testing and Information Assurance (IA) certification activities, integration of emerging technology, and On The Move (OTM) capabilities. The increase of \$1.098M from FY16 to FY17 will begin funding market research in anticipation of hardware refresh to begin in FY18.

Remote Video Viewing Terminal (RVVT) - Consists of Commercial Off-The-Shelf (COTS) Video Down-Link (VDL) products such as the VideoScout Mobile Configuration 2 (VS-MC/2), VideoScout Mobile Configuration 3 (VS-MC/3), Man Portable Video Down-Link (MPVDL) that allow for the viewing and exploitation of Full Motion Video (FMV) from Intelligence, Surveillance and Reconnaissance (ISR) assets. VDL systems are mission critical for coordination of direct and indirect fires and the prevention of fratricide. These systems provide the warfighter with video and metadata from all USMC manned and unmanned aircraft to include but not limited to Raven B, Puma, Micro-UAS, Shadow, Predator, Fire Scout, and Litening Pod on P-3, AV8-B, and F/A-18. Data is displayed to Forward Observers (FO), Joint Fires Observers (JFO), Joint Terminal Attack Coordinators (JTAC), and Forward Air Controller (FAC). The RVVT family of systems is reported as an IT system in the NC36 budget submission. (RDTE: 0206313M). The decrease of \$1.020M from FY16 to FY17 is due to a decreased requirement.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: COC: Continued Capability Solution	1.591	2.605	3.983	0.000	3.983
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Continued to conduct analysis of technologies and software interoperability for integration in COC Baseline.					
FY 2016 Plans: -Initiate market research, test and software integration efforts needed to align with other C2 systems.					
FY 2017 Base Plans: -Continue testing and software integration efforts needed to align with other C2 systems. -Initiate market research in anticipation of hardware refresh beginning in FY18.					
FY 2017 OCO Plans: N/A					
Title: COC: Management Services	0.000	0.853	0.573	0.000	0.573
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: -Initiate engineering support for system optimization and system enhancements</p> <p>FY 2017 Base Plans: -Continue engineering support for system optimization and system enhancements.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Composite Tracking Network (CTN): Support and Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Continued S/W Maintenance Support, USG-4B Analysis/Extraction, Data Analysis, Safety, System Engineering. - Continued data Collection and Analysis. - Continued systems engineering and updates to the software baseline. - Continued travel, engineering support, test support, and S/W support.</p> <p>FY 2016 Plans: - Continue Software Maintenance Support and Certification. - Continue Data Collection and Analysis. - Continue systems engineering and updates to the software baseline. - Continue travel, engineering support, and test support.</p> <p>FY 2017 Base Plans: - Continue Software Maintenance Support and Certification. - Continue Data Collection and Analysis. - Continue systems engineering and updates to the software baseline. - Continue travel, engineering support, and test support. - Initiate Common Array Block - Expeditionary (CAB-E) support efforts to replace current Compact Solid State Antenna (CSSA) which will be obsolete and unreliable by FY18.</p> <p>FY 2017 OCO Plans:</p>	0.960 -	0.458 -	0.746 -	0.000 -	0.746 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Composite Tracking Network (CTN): Certification of Interfaces</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Common Array Block (CAB-E) testing/verification/updates as well as associated engineering support. - Continued to support updates for Accelerated Mid-term Interoperability Improvement Program (AMIIP). <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue CAB-E testing/verification/updates. - Continue to support updates for AMIIP. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue CAB-E testing/verification/updates. - Continue to support updates for AMIIP. - Initiate software certification to maintain interoperability with Cooperative Engagement Capability (CEC) Network to include associated engineering support. - Initiate Independent Verification and Validation support as well as Information Assurance (IA) tactical side hardening regression testing. <p>FY 2017 OCO Plans: N/A</p>	0.059	0.150	1.667	0.000	1.667
	-	-	-	-	-
<p>Title: Composite Tracking Network (CTN): Engineering Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued CAB-E Antenna developmental activities as well as associated engineering support. - Continued integration and interoperability developmental testing with the Common Aviation Command and Control System (CAC2S), Ground/Air Task-Oriented Radar (G/ATOR), and the TPS-59 Mode V antenna. - Continued Information Assurance (IA) developmental activities. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue Common Array Block-Expeditionary (CAB-E) antenna testing/verification/updates and developmental Activities. 	1.188	0.686	2.154	0.000	2.154
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Continue integration and interoperability developmental testing with CAC2S, G/ATOR, and the TPS-59 Mode V. - Continue Information Assurance (IA) developmental activities. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Conduct developmental testing in support of Common Array Block-Expeditionary (CAB-E) to include associated engineering support. - Continue Common Array Block-Expeditionary (CAB-E) antenna testing/verification/updates and developmental activities. - Continue integration and interoperability developmental testing with CAC2S, G/ATOR, and the TPS-59 Mode V. - Continue Information Assurance (IA) developmental activities. <p>FY 2017 OCO Plans: N/A</p>						
<p>Title: Marine Air Command and Control System (MACCS) Service Life Extension Program (SLEP)/Sustainment: Product Development, Support and Mgmt Services, and T&E</p> <p align="right">Articles:</p>		1.046	0.494	0.000	0.000	0.000
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Tactical Air Command Center (TACC) and Tactical Air Operations Center (TAOC) Life Cycle Support through ongoing Post Development Software Support (PDSS) activities. - Continued active refresh of obsolete hardware items from MACCS systems. - Completed production of COTS Refresh kit for the Mobile Tactical Air Operations Module (MTAOM) and fielding to the Operational Forces. - Completed the Service Level Test for the MTAOMs COTS refresh. - Continued Information Assurance updates (tri-annual drops). - Initiated and completed software updates including delivery of new operating system. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue TACC and TAOC Life Cycle Support through ongoing Post Development Software Support (PDSS) activities. - Continue active refresh of obsolete hardware items from MACCS systems. 		-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue Information Assurance updates (tri-annual drops). FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: RVVT: Preparation Articles:	1.008 -	1.183 -	0.163 -	0.000 -	0.163 -
FY 2015 Accomplishments: - Completed the development of Full Motion Video (FMV) requirements to support the RVVT family of systems. FY 2016 Plans: - Continue Analysis of Alternatives (AOA) for family of RVVT systems. FY 2017 Base Plans: - Complete analysis for MC/2 and MC/3 replacement. FY 2017 OCO Plans: N/A					
Title: TBMCS - Test and Evaluation Articles:	2.218 -	1.284 -	2.660 -	0.000 -	2.660 -
FY 2015 Accomplishments: -Continued test and evaluation support for TBMCS upgrades for Joint Interoperability. FY 2016 Plans: -Continue test and evaluation support for TBMCS upgrades for Joint Interoperability. FY 2017 Base Plans: -Continue test and evaluation support for TBMCS upgrades for Joint Interoperability. -Initiate development test and evaluation support of USMC developed software releases which support the software baseline for Cyber Security upgrades as well as Cyber Security Accreditation. FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	8.070	7.713	11.946	0.000	11.946

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/4640CT: CTN	1.479	0.015	1.515	-	1.515	5.359	5.561	3.527	0.000	0.000	66.988
• PMC/4640CU: MACCS	0.907	0.884	2.855	-	2.855	0.062	0.050	0.051	0.052	Continuing	Continuing
• PMC/4640DX: TBMCS	3.799	2.304	1.299	-	1.299	1.388	1.418	1.402	1.401	Continuing	Continuing
• PMC/419000: COC	5.025	21.330	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	224.678
• PMC/464023: RVVT	1.784	0.204	10.248	-	10.248	10.665	8.152	8.244	8.403	Continuing	Continuing
• PMC/463100: COC	0.000	0.000	9.827	-	9.827	10.177	10.806	11.281	11.797	Continuing	Continuing

Remarks

PMC funding for Common Aviation Command and Control (CAC2S) program was moved to PE 0206335M, BLI 4644 CAC2S beginning FY 2015. Prior year funding is located in PE 0206313M, BLI 4640 Air Operations C2 Systems.

PMC funding for Combat Operations Center (COC) program was moved from BLI 4190 to 4631 starting in FY17.

D. Acquisition Strategy

TBMCS is an ACAT III, USAF Program with joint interest/oversight. It was mandated by the Chairman, Joint Chiefs of Staff in July 93 for Air Tasking Order (ATO) Interoperability among all services. USMC will continue following the USAF lead when fielding only the joint modules of TBMCS. As USMC unique requirements are identified the USMC will deviate accordingly when required to sufficiently sustain systems. Over the course of the FYDP, TBMCS is to separately manage the development and fielding of software and hardware engineering change proposals for Information Assurance (IA) and functionality updates to ensure daily direct support of the Air Battle Plan in joint theaters of operation.

MACCS - The acquisition strategy implemented by the MACCS Sustainment Program Office is to maintain the readiness, relevance, and capabilities of the portfolio of post-Milestone C systems through Post Deployment Software Support (PDSS) activities, active refresh of obsolete hardware items, and the implementation of system improvements/modifications in accordance with approved systems engineering processes. Engineering changes to the systems make maximum use of Commercial Off-The-Shelf (COTS), Government Off-The-Shelf (GOTS), and Non-Developmental Items (NDI) in order to decrease risk, leverage developed capabilities and support apparatus, and minimize investment expenditures. These activities are performed by Original Equipment Manufacturer (OEM) commercial entities under contract to Marine Corps Systems Command (MCSC) or by Naval Surface Warfare Center (NSWC) Crane as the MACCS Sustainment Program In-Service Engineering Agent (ISEA). The next major milestone for the MACCS Sustainment Programs is Phase-out or Disposal as the replacement Common Aviation Command and Control System (CAC2S) reaches full operational capability.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>

CTN - The USMC's CTN acquisition strategy is to participate in the USN's Cooperative Engagement Capability (CEC) program procurement and testing, making necessary modifications to support the Marine Corps' requirement. The next major efforts are the development of the Common Array Block-Expeditionary (CAB-E) Antenna to replace the Composite Solid State Antenna (CSSA), which will become obsolete in FY 2018, and completion of interfaces with Ground/Air Task Oriented Radar (G/ATOR) and CAC2S.

RVVT - The RVVT acquisition strategy is to continually improve the Video Down-Link (VDL) products by enhancing the encryption, range, and reducing the power and weight requirements through competition. Long term efforts are to integrate FMV to support JFOs and JTACs beginning in FY17. In FY18, begin development of a system to replace the MC/2, MC/3 configurations. RVVT utilizes competitively-procured components. RDTE funds are used to identify and analyze operational requirements and allocate performance requirements for competitive procurements.

COC - The COC AN/TSQ-239 (V)2/3/4 is the foundation of USMC C2, meeting near term communications and network requirements across the OpFor and supports pre-deployment training requirements in support of OEF. There is a continuing developmental effort to evolve the COC into a fully integrated MAGTF C2 capability. FY15 supported continual tech refresh, technology insertion, modernization and software upgrade releases and alignment with associated Command and Control programs as required by OpFor Commanders. FY16 and FY17 continues to maintain industry standard and interoperability with disparate C2 systems across the joint forces.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2273 / Air Ops Cmd & Control (C2) Sys
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	253.462	0.000		0.000		0.000		-		0.000	0.000	253.462	-
CTN Engineering Development	C/CPFF	NAVSEA PEO IWS : Washington, DC	13.134	1.188	Feb 2015	0.686	Feb 2016	2.154	Feb 2017	-		2.154	Continuing	Continuing	Continuing
MACCS Engineering Development	WR	NSWC : Crane, IN	2.140	0.200	Nov 2014	0.000		0.000		-		0.000	0.000	2.340	-
COC	WR	NSWC : Dahlgren, VA	5.035	0.395	Feb 2015	2.063	Mar 2016	1.077	Feb 2017	-		1.077	0.000	8.570	-
COC	C/FFP	NSWC : Dahlgren, VA	0.000	0.000		0.000		1.475	Jan 2017	-		1.475	0.000	1.475	-
COC Energy Initiatives	WR	NSWC : Crane, IN	0.312	0.117	Jun 2015	0.000		0.000		-		0.000	0.000	0.429	-
COC	WR	SSC-LANT : Charleston, SC	0.000	1.079	Dec 2014	0.302	Mar 2016	1.000	Dec 2016	-		1.000	0.000	2.381	-
COC SIM/STIM	C/FFP	NSWC : Dahlgren, VA	0.180	0.000		0.240	Mar 2016	0.431	Mar 2017	-		0.431	0.000	0.851	-
RVVT	MIPR	ARDEC : Picatinny, NJ	0.000	0.000		1.183	Jan 2016	0.000		-		0.000	0.000	1.183	-
RVVT	MIPR	AMRDEC : Huntsville, AL	0.000	1.008	Apr 2015	0.000		0.163	Dec 2016	-		0.163	0.000	1.171	-
Subtotal			274.263	3.987		4.474		6.300		-		6.300	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	41.560	0.000		0.000		0.000		-		0.000	0.000	41.560	-
CTN Engineering Support	WR	NSWC : Dahlgren, VA	4.557	0.800	Jan 2015	0.231	Jan 2016	0.682	Jan 2017	-		0.682	Continuing	Continuing	Continuing
CTN Engineering Support	WR	NSWC : PHD, CA	0.377	0.138	Feb 2015	0.054	Feb 2016	0.040	Feb 2017	-		0.040	Continuing	Continuing	Continuing
CTN Engineering Support	WR	NSWC : Crane, IN	1.201	0.000		0.150	Nov 2015	0.000		-		0.000	0.000	1.351	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2273 / Air Ops Cmd & Control (C2) Sys
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CTN Engineering Support	Various	Travel-TAD : Not Specified	1.055	0.022	Sep 2015	0.023	Sep 2016	0.024	Sep 2017	-		0.024	Continuing	Continuing	Continuing
MACCS Engineering Support	WR	NSWC : Crane, IN	1.038	0.300	Nov 2014	0.031	Nov 2015	0.000		-		0.000	0.000	1.369	-
MACCS Life Cycle Support	Reqn	NGES : Woodland Hills, CA	1.884	0.288	Sep 2015	0.364	Sep 2016	0.000		-		0.000	0.000	2.536	-
MACCS Engineering Support	C/FFP	SPAWAR Charleston : Charleston, SC	0.999	0.138	Nov 2014	0.076	Nov 2015	0.000		-		0.000	0.000	1.213	-
Subtotal			52.671	1.686		0.929		0.746		-		0.746	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	32.896	0.000		0.000		0.000		-		0.000	0.000	32.896	-
TBMCS Software Development	C/FFP	Lockheed Martin : Colorado Springs, CO	5.109	1.876	Mar 2015	1.067	Mar 2016	2.660	Mar 2017	-		2.660	Continuing	Continuing	Continuing
TBMCS Software Development	MIPR	Englin AFB : Englin AFB, FL	0.504	0.342	Jun 2015	0.217	Jun 2016	0.000		-		0.000	Continuing	Continuing	Continuing
CTN Developmental Testing	WR	NSWC Corona : Corona, CA	1.557	0.000		0.000		0.333	Feb 2017	-		0.333	0.000	1.890	-
CTN Developmental Testing	WR	NSWC DD : Dahlgren, VA	1.262	0.059	Jan 2015	0.150	Jan 2016	0.000		-		0.000	0.000	1.471	-
CTN Engineering/IA Development	C/CPFF	NAVSEA PEO IWS : Washington DC	0.333	0.000		0.000		1.334	Jan 2017	-		1.334	0.000	1.667	-
MACCS Information Assurance Upgrades	Reqn	NGES : Woodland Hills, CA	3.919	0.100	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MACCS Interoperability Testing	MIPR	DISA : Washington, DC	0.758	0.020	Jan 2015	0.023	Jan 2016	0.000		-		0.000	0.000	0.801	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

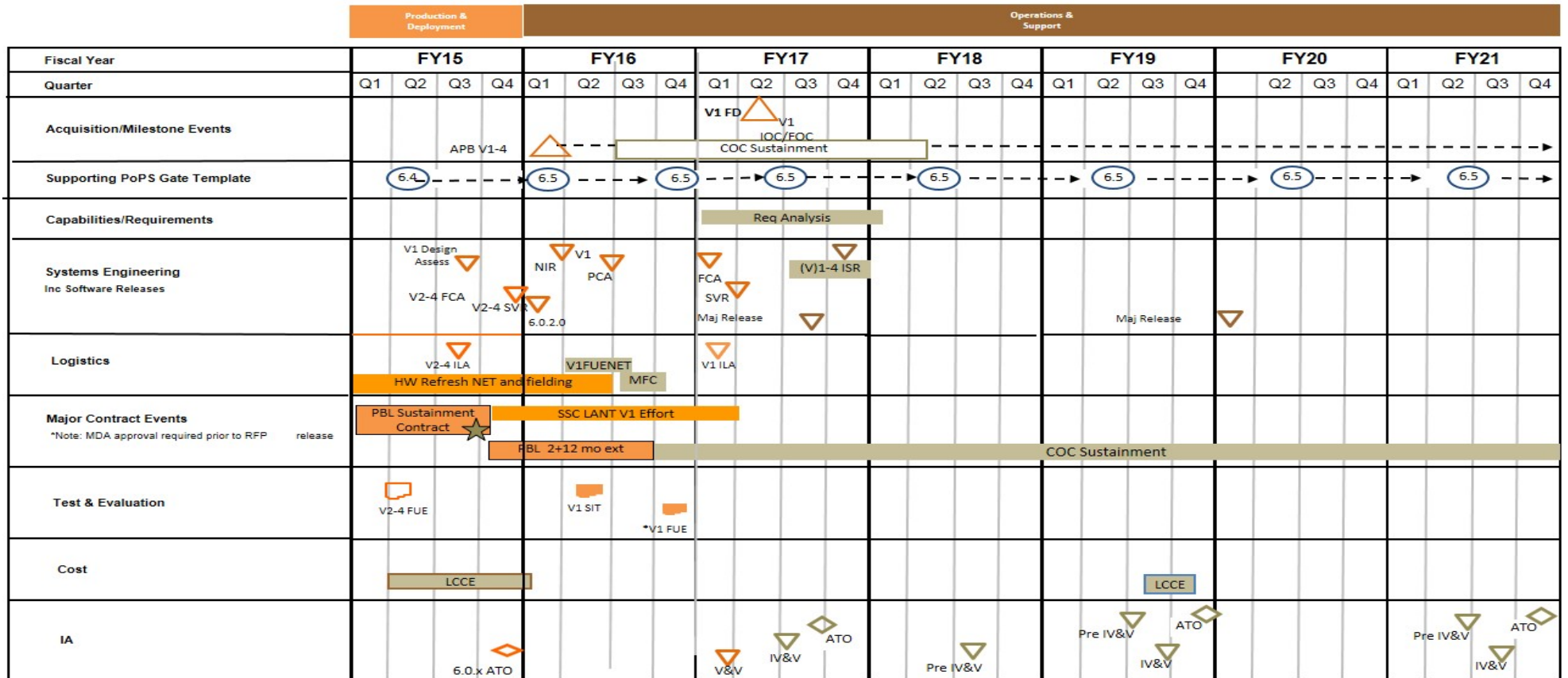
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2273 / Air Ops Cmd & Control (C2) Sys

Program Schedule-COC (V)1-4



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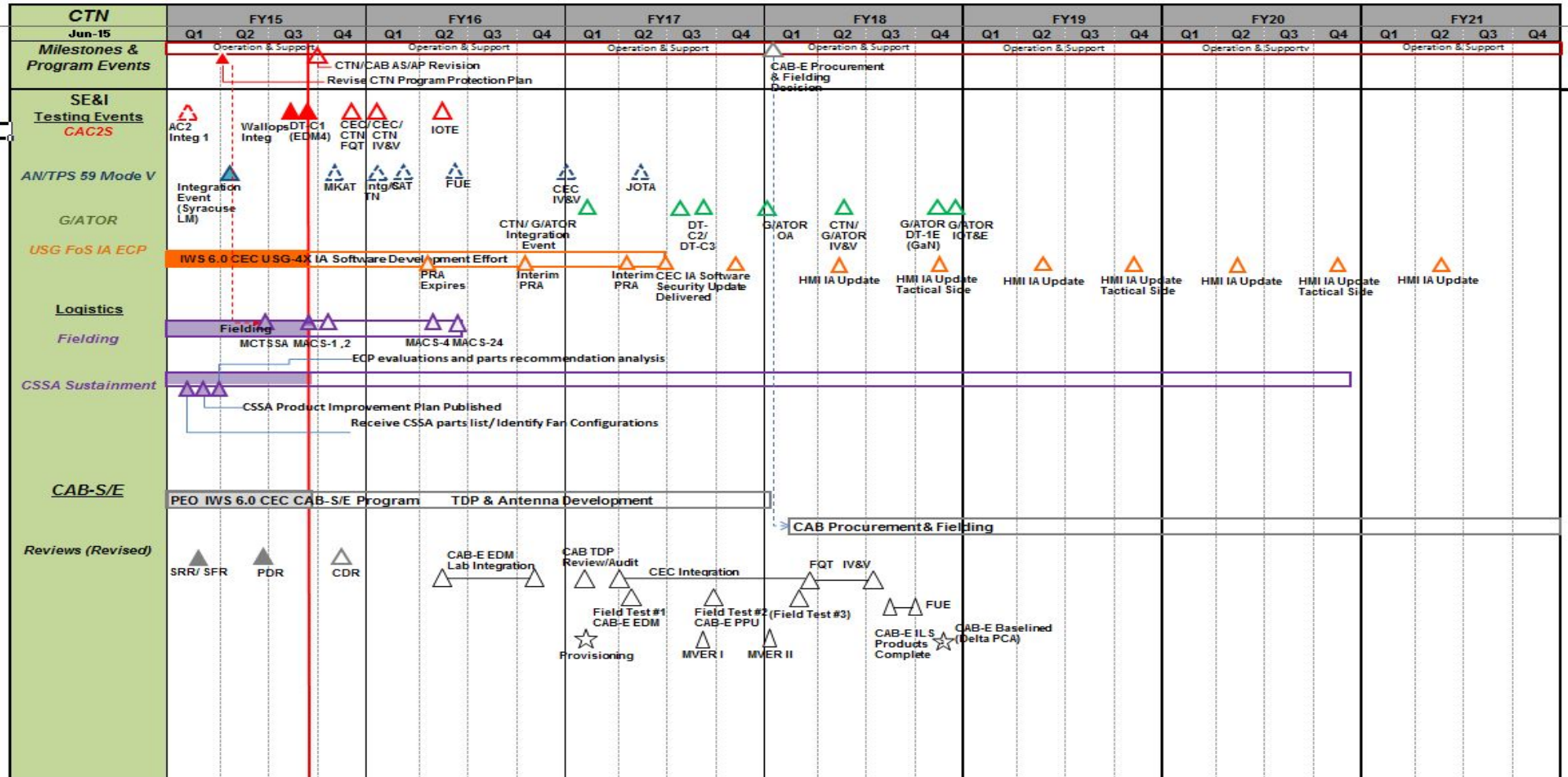
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

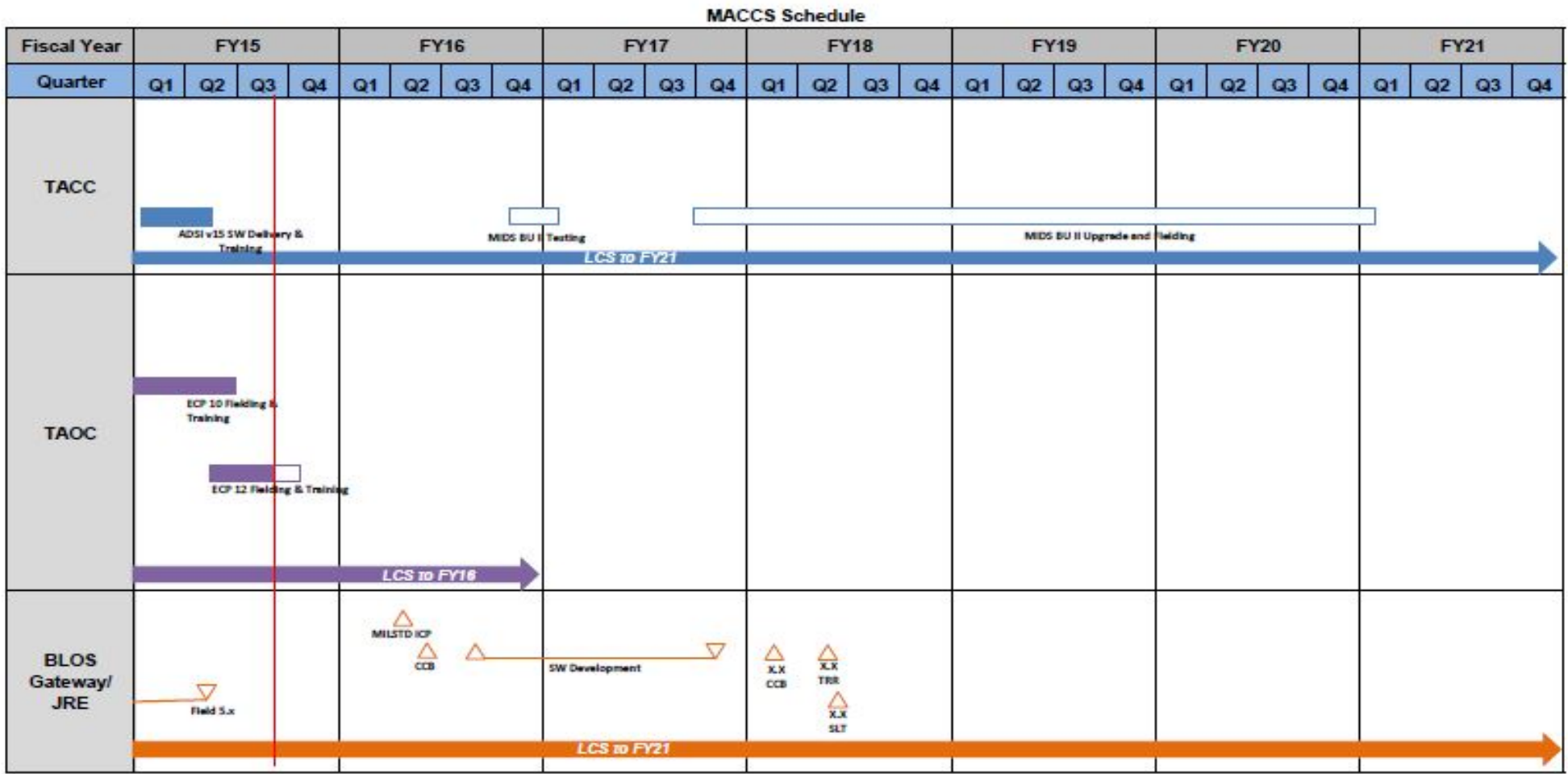
R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2273 / Air Ops Cmd & Control (C2) Sys



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2273 / Air Ops Cmd & Control (C2) Sys



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2273 / Air Ops Cmd & Control (C2) Sys

TBMCS																																																
Fiscal Year	FY15				FY16				FY17				FY18				FY19				FY20				FY21																							
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																				
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Fielding Decisions																																																
Capability Requirements																																																
Systems Engineering																																																
Major Contract Events																																																
Production (Fielding)																																																
Logistics																																																
Test & Evaluation																																																
Training																																																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

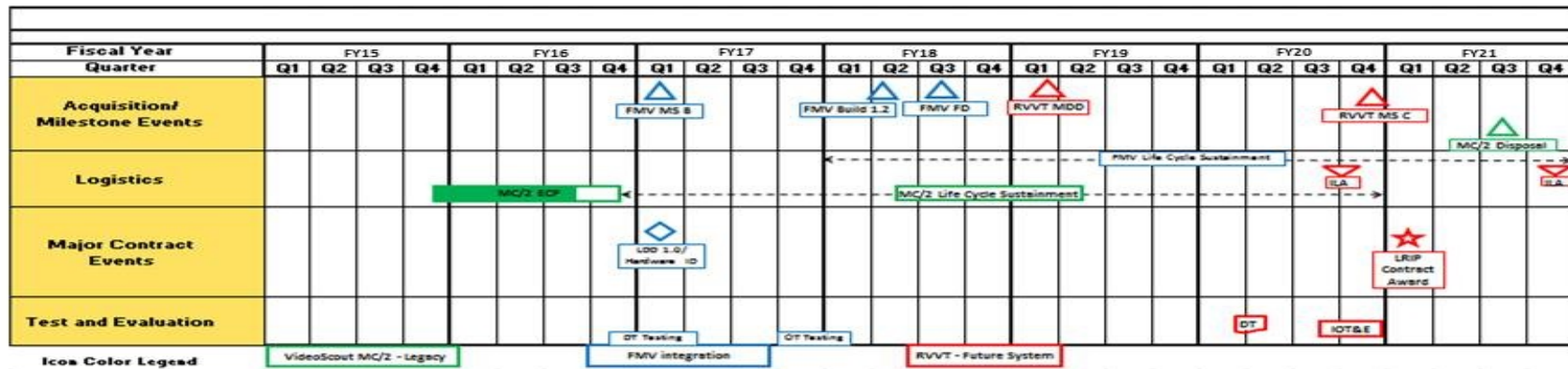
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2273 / Air Ops Cmd & Control (C2) Sys

RVVT Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2273				
TBMCS MR4V Fielding Decisions	4	2016	3	2017
TBMCS MR5V Fielding Decision	4	2017	3	2018
TBMCS MR4V DT Events	3	2016	2	2017
TBMCS MR5V DT Events	3	2017	2	2018
TBMCS MR4V Fielding Kits (PMC 4640)	4	2016	3	2017
TBMCS MR5V Fielding Kits (PMC 4640)	4	2017	3	2018
CTN Integration Event with G/ATOR	1	2017	1	2017
CTN - AN/TPS 59 Mode V JOTA	2	2017	2	2017
CTN - DT-C2 G/ATOR	3	2017	3	2017
CTN - DT-C3 G/ATOR	3	2017	3	2017
CTN - CAB-E Development	1	2015	1	2018
CTN - CAB-E Procurement and Fielding (PMC 4640)	1	2018	4	2021
MACCS Software Development	3	2016	4	2017
MACCS MIDS BU II Upgrades and Fielding (PMC 4640)	3	2017	1	2021
RVVT FMV Milestone B	1	2017	1	2017
RVVT Limited Deployment Decision (LDD)	1	2017	1	2017
RVVT Materiel Development Decision (MDD)	1	2019	1	2019
RVVT Future System Milestone C	4	2020	4	2020
COC V1 Fielding Decision	1	2017	1	2017
COC V1 IOC	2	2017	2	2017
COC V1 FOC	2	2017	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2273 / <i>Air Ops Cmd & Control (C2) Sys</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
COC Blk 1 Req Analysis	1	2017	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>				Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2274: <i>Command & Control Warfare Sys</i>	25.117	7.833	8.940	6.531	-	6.531	8.138	8.232	7.052	7.213	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

COUNTER RADIO-CONTROLLED IMPROVISED EXPLOSIVE DEVICE (RCIED) ELECTRONIC WARFARE (USMC CREW) SYSTEMS are vehicle mounted and dismounted modular programmable multi-band radio frequency jammers designed to deny enemy use of selected portions of the radio frequency spectrum in the vicinity of the jammer to counter the RCIED threat. The mounted and dismounted systems provide Marines in vehicle convoys and on foot with the necessary protection from the continued and evolving threat of deadly RCIEDs. Legacy CREW systems are currently deployed to meet threats in the multiple theaters of operation and fielded to selected MEUs in support of worldwide deployment. To continue to support the various worldwide missions, each CREW unit receives customized programming (loadsets) to counter the area's RCIED threats. The testing, programming development, and product improvement research are funded with the CREW's RDTE,N funding and prioritized to meet the demand of all deployed CREW assets. The decrease of \$2.409M from FY16 to FY17 reflects reduced test and evaluation efforts and reduced management support of development efforts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: *USMC CREW - Product Development	1.788	1.597	1.932	0.000	1.932
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued the development of waveform loadsets, including the development of the CREW MEU mounted and dismounted system's waveform loadsets into the group of required CREW systems supported. The increase in system variants will also result in the need to continue the development of waveform/loadsets for UTS across multiple deployment theaters.					
-Continued to develop vehicle installation kits for the CREW MEU and MARCENT mounted systems in order to support the integration and installation of the upgrade kits into Marine Corps vehicle platform while completing the development of the CVRJ(V)2 integration kits.					
FY 2016 Plans:					
-Continue development of software waveform loadsets for USMC CREW Systems including mounted and dismounted system's waveforms used specifically to counter IED threat worldwide.					
-Continue software waveform loadsets for Universal Test Sets (UTS) across multiple deployment theaters.					
-Continue development of additional software threat loads to overcome system capability issues on individual platform types.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue to conduct systems engineering support for the CREW family of systems and integration support required for the mounted CREW into Marine Expeditionary Units (MEU)/Marine Expeditionary Force (MEF) mission profiles by developing vehicle installation kits for these mounted units.</p> <p>-Continue system support for CVRJ (V)2, Thor III, Modi, and Universal Test Sets by analyzing CREW performance impacts resulting from compatibility and environmental risk impacts.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: *USMC CREW - Test and Evaluation</p> <p align="right">Articles:</p>	2.180	2.952	0.261	0.000	0.261
<p>FY 2015 Accomplishments:</p> <p>-Continued to conduct test events in support of the CVRJ (V)1 and (V)2, Thor III, CREW MEU, Modi and Universal Test Set (UTS) systems regarding its ability to defeat the RCIED threat in multiple worldwide locations.</p> <p>-Continued to conduct compatibility testing against USMC and other services devices to ensure Marine Corps CREW systems maintained required performance capabilities.</p> <p>-Continued to characterize operational limitations regarding the CREW systems and standoff restrictions for its operation.</p> <p>-Completed mounted and dismounted CREW improvements testing to distinguish possible design limitations that can be improved to optimize the Marine use of the system.</p> <p>FY 2016 Plans:</p> <p>-Continue test events in support of the CVRJ (V)2, Thor III, Modi and Universal Test Set (UTS) systems regarding its ability to defeat the RCIED threat in multiple worldwide locations.</p> <p>-Continue testing of the mounted and dismounted CREW production units that will be fielded for MEU use.</p> <p>-Continue compatibility testing against USMC and other services devices to ensure Marine Corps CREW systems maintain required performance capabilities.</p> <p>-Continue characterizing operational limitations regarding the CREW systems and standoff restrictions for its operation.</p> <p>-Continue mounted and dismounted CREW improvements testing to distinguish possible design limitations that can be improved to optimize the Marine use of the system.</p> <p>FY 2017 Base Plans:</p> <p>-Continue test events in support of the CVRJ (V)2, Thor III, Modi and Universal Test Set (UTS) systems regarding its ability to defeat the RCIED threat in multiple worldwide locations.</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016		
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue testing of the mounted and dismounted CREW production units that will be fielded for MEU use.</p> <p>-Continue compatibility testing against USMC and other services devices to ensure Marine Corps CREW systems maintain required performance capabilities.</p> <p>-Complete characterizing operational limitations regarding the CREW systems and standoff restrictions for its operation.</p> <p>-Complete mounted and dismounted CREW improvements testing to distinguish possible design limitations that can be improved to optimize the Marine use of the system.</p> <p>FY 2017 OCO Plans: N/A</p>					
Title: *USMC CREW - Management					
	3.270	3.769	3.689	0.000	3.689
Articles:	-	-	-	-	-
<p>FY 2015 Accomplishments:</p> <p>-Continued to manage the new RCIED techniques development group and hardware engineering team to enhance loadsets upgrades to counter the evolving threat and prevent technology obsolescence for CVRJ (V)1 and (V)2, Thor III, Modi, CREW MEU mounted/dismounted systems, and the Universal Test Set systems. Conducted system level configuration management activities for all CREW systems.</p> <p>FY 2016 Plans:</p> <p>-Continue to manage the new RCIED techniques development group and hardware engineering team to enhance loadsets upgrades to counter the evolving threat and prevent technology obsolescence for CVRJ (V)1 and (V)2, Thor III, Modi and the Universal Test Set systems. Conducting system level configuration management activities for all CREW systems.</p> <p>FY 2017 Base Plans:</p> <p>-Continue to manage the new RCIED techniques development group and hardware engineering team to enhance loadsets upgrades to counter the evolving threat and prevent technology obsolescence for CVRJ (V)1 and (V)2, Thor III, Modi and the Universal Test Set systems. Conducting system level configuration management activities for all CREW systems.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	7.833	8.940	6.531	0.000	6.531

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/652000: CREW	0.050	0.000	0.000	75.000	75.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/700000: CREW	3.146	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.146

Remarks

D. Acquisition Strategy

COUNTER RADIO-CONTROLLED IMPROVISED EXPLOSIVE DEVICE (RCIED) ELECTRONIC WARFARE (USMC CREW): CREW mounted and dismounted systems provide Marines in vehicle convoys and on foot with the necessary protection from the continued and evolving threat of deadly RCIEDs in all current and future operations. The program will continue to develop new techniques, improve capabilities, enhance software and develop upgrades to counter evolving threats and prevent technology obsolescence. Activities include waveform development, non-recurring engineering for system enhancements, capability upgrades, and installation kit designs, integration of the enhancements/Vehicle Installation Kits (VIKs) and the tests/government studies required to support these changes. 3100 CVRJ(V1) mounted systems were upgraded to a Band C (V2) capability and fielded in FY13. The Thor III are dismounted systems fielded to OEF and to selected MEU units in FY12/FY13. The Modi is a dismounted system which will commence initial replacement of the Thor III. 40 Modi are expected to be fielded in FY16. The Modi II program consists 565 dismounted systems and was initiated as an ongoing effort to develop new techniques, improve capabilities, enhance software and develop waveform loadsets to counter evolving threats and prevent technology obsolescence for the THOR III dismounted systems. The 565 dismounted systems were procured in FY15 with expected delivery in FY16. In FY17 the USMC will procure 500 replacement mounted systems within enhance capabilities to augment the CRVJ V2.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USMC CREW	WR	NSWC CD : CRANE IN	2.380	1.277	Jun 2015	1.597	Feb 2016	1.932	Jan 2017	-		1.932	Continuing	Continuing	Continuing
USMC CREW	SS/FFP	NAVSEA : BALTIMORE, MD	5.189	0.250	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
USMC CREW	WR	SSC-A : CHARLESTON, SC	0.978	0.261	Jun 2015	0.000	Jun 2016	0.000	Jan 2017	-		0.000	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	0.871	0.000		0.000		0.000		-		0.000	0.000	0.871	-
Subtotal			9.418	1.788		1.597		1.932		-		1.932	-	-	-

Remarks
 USMC CREW FY15: USMC CREW utilized NAVSEA (Johns Hopkins University Applied Physics Laboratories) to develop waveform loadsets for all CREW systems to continue to counter the evolving RCIED Threats.
 USMC CREW FY15: USMC CREW will utilize SSC-A (SPAWAR, Charleston) to develop mounting solutions in order to integrate mounted systems into Marine Corps Vehicle platforms.
 USMC CREW FY15 - FY17: USMC CREW will utilize NSWC CRANE (Crane, IN) to design, develop and contract engineering changes to the CREW systems and to develop waveform loadsets for all CREW systems to continue to counter the evolving RCIED Threats.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USMC CREW	WR	SSC-A : CHARLESTON, SC	0.553	0.295	Jan 2015	0.308	Feb 2016	0.322	Jan 2017	-		0.322	Continuing	Continuing	Continuing
USMC CREW	WR	NSWC DD : DAHLGREN, VA	1.008	0.300	Jan 2015	0.314	Dec 2015	0.327	Jan 2017	-		0.327	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	3.800	0.000		0.000		0.000		-		0.000	0.000	3.800	-
Subtotal			5.361	0.595		0.622		0.649		-		0.649	-	-	-

Remarks
 USMC CREW NSWC Dahlgren FY15 - FY17: RADHAZ (Radio Hazard) Studies and Configuration Management Support
 USMC CREW SSC-Atlantic FY15 - FY17: System Engineering and validation and verification

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2274 / Command & Control Warfare Sys
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USMC CREW	MIPR	YPG : YUMA, AZ	3.821	2.000	Dec 2014	2.292	Feb 2016	0.261	Apr 2017	-		0.261	Continuing	Continuing	Continuing
USMC CREW	MIPR	APG : ABERDEEN, MD	0.000	0.098	Jan 2016	0.000		0.000		-		0.000	0.000	0.098	-
USMC CREW	WR	NSWC DD : DAHLGREN, VA	0.000	0.082	Dec 2015	0.000		0.000		-		0.000	0.000	0.082	-
USMC CREW	MIPR	SOCOM : TAMPA, FL	0.000	0.000		0.200	Jun 2016	0.000		-		0.000	0.000	0.200	-
USMC CREW	Various	VARIOUS : VARIOUS	1.090	0.000		0.460	Aug 2016	0.000		-		0.000	0.000	1.550	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	2.256	0.000		0.000		0.000		-		0.000	0.000	2.256	-
Subtotal			7.167	2.180		2.952		0.261		-		0.261	-	-	-

Remarks
 USMC CREW FY15 - FY17: USMC CREW will utilize YPG (Yuma Proving Grounds, AZ) to provide test ranges and results analysis for all CREW systems.
 USMC CREW FY15: USMC CREW will utilize APG (Aberdeen Proving Ground, MD) to provide test support for Modi II systems.
 USMC CREW FY15: USMC CREW will utilize NSWC DD to provide test support and reports.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
USMC CREW	C/FFP	CECOM : APG, MD	0.000	1.117	Sep 2015	0.000		0.000		-		0.000	0.000	1.117	-
USMC CREW	WR	NSWC CD : CRANE, IN	2.336	1.493	Jan 2015	3.034	Feb 2016	2.927	Jan 2017	-		2.927	Continuing	Continuing	Continuing
USMC CREW	WR	NSWC DD : DAHLGREN, VA	0.480	0.660	Dec 2014	0.735	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
USMC CREW	WR	SSC-A : CHARLESTON, SC	0.355	0.000		0.000		0.762	Jan 2017	-		0.762	0.000	1.117	-
Subtotal			3.171	3.270		3.769		3.689		-		3.689	-	-	-

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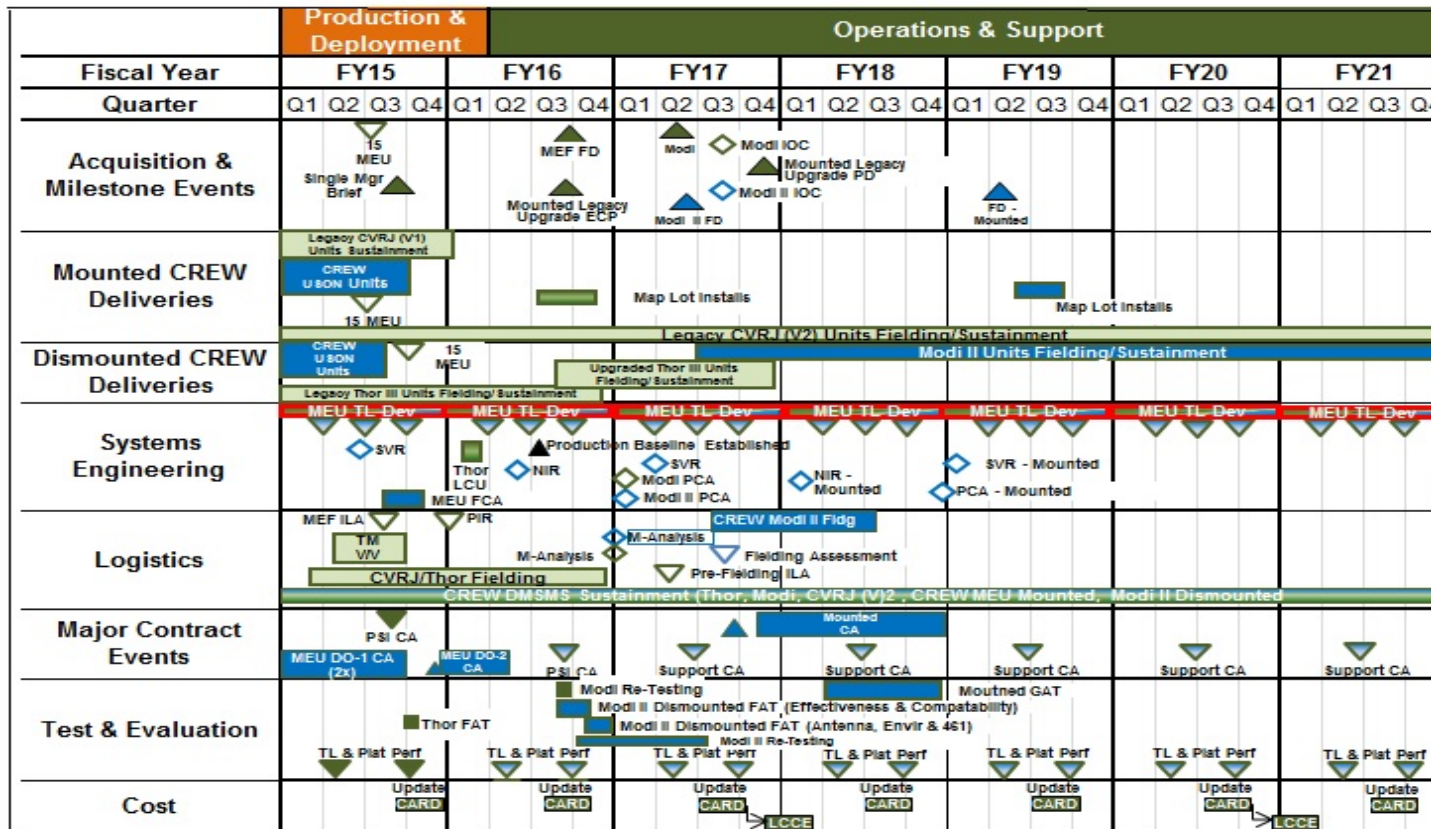
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2274 / Command & Control Warfare Sys



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2274 / <i>Command & Control Warfare Sys</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2274				
USMC CREW Waveform Development	1	2015	4	2021
USMC CREW MEU Dismounted Contract Award	4	2015	4	2015
CREW MEU Fielding Decision	3	2017	3	2017
CREW Mounted Contract Award	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>				Project (Number/Name) 2275 / <i>Marine Corps Tactical Radio Systems</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>2275: Marine Corps Tactical Radio Systems</i>	29.853	6.577	3.351	12.661	-	12.661	9.300	8.004	7.063	7.124	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Communications Modernization (TCM): TCM provides tactical voice and data radio systems for mounted and dismounted operations within all echelons of the MAGTF. TCM procurements enable an initial joint networking capability and support National Security Agency (NSA) Communications Security (COMSEC) Modernization requirements. Funding provides engineering and test support for both the Mobile User Objective System (MUOS) requirement, and AN/MRC-145B service life extension program.

Networking on the Move (NOTM): NOTM provides a robust command and control (C2) capability by integrating tactical data systems with on the move satellite communications (SATCOM) for beyond line-of-sight ability that allows battlefield commanders to have uninterrupted two-way access to digital data, anywhere on the battlefield. NOTM provides MAGTF commanders and staffs with full Common Operational Picture (COP) access, virtually unlimited situational awareness and a powerful ability to issue digital orders (fires, maneuver, planning) to GCE, ACE and LCE units at all echelons while on-the-move or at-the-halt. NOTM also provides Marine units the capability to link with and extend Defense Information System Network (DISN) services; SIPRNet, NIPRNet, and Defense Switched Networks (DSN). Integrated full motion video (receipt and retransmission), tactical voice communications plus three options for secure wireless local area network (LAN) connectivity between staff members makes this amphibious capability a crucial asset to all elements of the Marine Air-Ground Task Force (MAGTF). NOTM achieved initial operational capability at I MEF in March 2013 and continued fielding a total of 56 systems at I MEF, II MEF, III MEF and the support establishment through August 2014. The funding increase of \$8.468M from FY16 to FY17 will fund Engineering Change Proposals (ECPs), technology refreshes to extend the systems life and maintain interoperability and major product improvements to complete the AAO of 140 systems as well as initiate development of NOTM-Airborne and NOTM-Internally Transportable Vehicle (NOTM-ITV) systems.

Very Small Aperture Terminal (VSAT): VSAT is an integrated Commercial Off-the-Shelf (COTS) satellite communications terminal with a modular architecture that supports drop and insert architecture through scalable and flexible applications. VSAT uses commercial Ku and military Ka and X frequency bands to provide beyond line-of-sight (BLOS) connectivity to support intra-MAGTF communications (NIPRNET, SIPRNET, and telephony) down to the battalion/squadron level. With the addition of the VSAT-Expeditionary (VSAT-E) the VSAT Family of Systems (FoS) now comes in four modular variants, depending on MAGTF-size and mission.

Secure Mobile Anti-Jam Reliable Tactical-Terminal (SMART-T): SMART-T is an Army led, ACAT II program. The Marine Corps SMART-T has fielded the full Authorized Acquisition Objective (AAO) of 42 terminals and 35 AN/PSQ-17 Network Planning tools. SMART-T will be upgraded for compatibility with Advanced Extremely High Frequency (AEHF) waveforms and data rates and will replace the legacy SMART-T terminals. Out of warranty repair for legacy components will be executed, when necessary, using the Army National Maintenance Contract. The SMART-T program will procure and field its Terminal Operating Unit (TOU) upgrades and finish fielding its AEHF upgrades.

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TWTS is a capabilities portfolio of terrestrial based wideband transmission systems (formerly known as AN/TRC-170). Portfolio includes Beyond Line of Sight (BLOS) system (AN/TRC-170) and Line of Sight (LOS) systems AN/MRC-142 Family of Systems (FoS).

- The AN/TRC-170 is a transportable BLOS, terrestrial, self-enclosed troposcatter terminal (multichannel) capable of transmitting and receiving digital data over varying distances up to 100 miles. Next Generation Troposcatter (NGT) is a transit case solution which will replace the AN/TRC-170.
- AN/MRC-142B provides ship to shore communication.
- AN/MRC-142C FoS provides LOS, two-way, secure voice and data communications up to 35 miles.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: TCM: Product Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Funds will procure MUOS FW upgrade test assets and test antennas.</p> <p>FY 2017 Base Plans: Initiate efforts to procure prototypes for initial testing in support of new requirement for High Frequency Radio (HFR) Family of Systems (FOS).</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	0.150	0.200	0.000	0.200
	-	-	-	-	-
<p>Title: TCM: Engineering and Program Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued support for engineering and test efforts.</p> <p>FY 2016 Plans: Continue support for engineering and test efforts.</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.108	0.200	0.000	0.000	0.000
	-	-	-	-	-
<p>Title: TCM: Test and Evaluation Support</p>	0.115	0.150	0.788	0.000	0.788

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: Completed modeling and simulation test and EMI assessment for MRC 145B antenna bracket.</p> <p>FY 2016 Plans: Complete test and evaluation support for the Mobile User Objective System (MUOS).</p> <p>FY 2017 Base Plans: Initiate support of test events for the HFR FOS such as software development test, road shock, shake and vibration testing.</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: TCM: Management Services</p> <p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: Continued FFRDC support for engineering and testing efforts.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.238	0.000	0.000	0.000	0.000
<p>Title: NOTM: Product Development</p> <p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: Continued product development to reduce Size, Weight, and Power (SWaP) and incorporated Engineering Change Proposals (ECPs) that will provide system efficiencies for shipboard integration.</p> <p>FY 2016 Plans:</p>	1.950	0.256	7.501	0.000	7.501

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue product development for SATCOM denied environment.</p> <p>FY 2017 Base Plans: Continue Engineering Change Proposals (ECPs), technology refreshes to extend the systems life and maintain interoperability and major product improvements to complete the AAO of 140 systems. Initiate development of NOTM Airborne and NOTM Internally Transportable Vehicle test articles.</p> <p>The increase of \$7.245M from FY16 to FY17 is associated with the initiation of NOTM Airborne and NOTM ITV development efforts and increased effort for NOTM ECPs and technology refreshes.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: NOTM: Test and Evaluation Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to support Vehicle Platform Integration and X-band SATCOM accreditation, certification and laboratory testing.</p> <p>FY 2016 Plans: Continue test and evaluation support and testing.</p> <p>FY 2017 Base Plans: Continue test and evaluation support and testing.</p> <p>Increase of \$1.223M from FY16 to FY17 supports test and evaluation of NOTM Size, Weight and Power (SWaP) reduction ECPs.</p> <p>FY 2017 OCO Plans: N/A</p>	2.879	0.362	1.585	0.000	1.585
	-	-	-	-	-
<p>Title: VSAT: Engineering and Program Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	0.369	0.372	0.452	0.000	0.452
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Initiated support for Engineering Change Proposals (ECP) to include X-band capability in addition to upgrading ancillary subsystems and ensured interoperable with US Army, and continues Information Assurance support.</p> <p>FY 2016 Plans: Continue to support ECPs that include interoperability with US Army, modem modernization, and continues Information Assurance support.</p> <p>FY 2017 Base Plans: Continue ECP engineering support to include Quad-Band Satellite Emulator (QBSE) development.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: VSAT Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Funds external antenna testing for inter and intra-theater wideband communications.</p> <p>FY 2017 Base Plans: Initiates Quad-Band Satellite Emulator (QBSE) prototype procurement and testing.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000 -	0.336 -	0.250 -	0.000 -	0.250 -
<p>Title: VSAT: Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Funded FFRDC systems engineering, interoperability analysis, and acquisition planning support for technology research and obsolescence.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans:</p>	0.261 -	0.000 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2017 OCO Plans: N/A					
Title: SMART-T: Engineering and Program Support	0.427	0.191	0.189	0.000	0.189
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continued technical support for SMART-T system upgrades that include the Handheld Terminal Unit (HTU) and the Remote Operator Unit (ROU). Completed support of Advanced Extremely High Frequency (AEHF) Multi-Service Operational Test and Evaluation.					
FY 2016 Plans: Finalize ECP work and Procure Terminal Operating Units (TOU) for the AEHF SMART-T.					
FY 2017 Base Plans: Initiate ECPs to update the Operating systems of the AEHF SMART-T, TOU, and Tactical Mission Planning Subsystems (TMPSS). Continued Information Assurance support activities.					
FY 2017 OCO Plans: N/A					
Title: TWTS: Product Development	0.000	0.950	0.923	0.000	0.923
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Initiate development of a Next Generation Tropo (NGT) prototype.					
FY 2017 Base Plans: Continue development of Next Generation Tropo (NGT).					
FY 2017 OCO Plans: N/A					
Title: TWTS: Engineering and Program Support	0.230	0.201	0.463	0.000	0.463

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: Continued to provide engineering support to finalize and approve engineering change proposals (ECPs) for AN/MRC-142.</p> <p>FY 2016 Plans: Initiate engineering and program support for the Next Generation Tropo (NGT).</p> <p>FY 2017 Base Plans: Continue engineering and program support for the Next Generation Tropo (NGT).</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: TWTS: Test and Evaluation Support</p> <p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Initiate engineering and program support for the Next Generation Tropo (NGT).</p> <p>FY 2017 Base Plans: Continue test and evaluation of Next Generation Tropo (NGT).</p> <p>FY 2017 OCO Plans: N/A</p>	0.000 -	0.183 -	0.310 -	0.000 -	0.310 -
Accomplishments/Planned Programs Subtotals	6.577	3.351	12.661	0.000	12.661

C. Other Program Funding Summary (\$ in Millions)						Cost To					
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Complete	Total Cost
• PMC/4633-2: VSAT	8.698	2.004	1.989	-	1.989	1.060	3.056	3.133	3.194	Continuing	Continuing
• PMC/4633-3: TCM	55.752	58.700	36.778	2.725	39.503	60.052	35.972	145.834	273.865	Continuing	Continuing
• PMC/4633-4: SMART-T	0.610	0.491	0.537	-	0.537	0.549	0.571	0.593	0.605	Continuing	Continuing
• PMC/4633-5: TWTS	2.486	7.400	2.300	-	2.300	11.995	2.987	3.068	3.128	Continuing	Continuing

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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/4631-1: <i>NOTM</i>	23.202	1.418	37.461	-	37.461	42.114	30.326	30.828	3.912	Continuing	Continuing
• PMC/7000-1: <i>SMART-T Spares</i>	0.000	0.198	0.201	-	0.201	0.205	0.209	0.213	0.217	Continuing	Continuing

Remarks

D. Acquisition Strategy

Tactical Communications Modernization (TCM): TCM will be testing and evaluating the next generation tactical radio systems supporting: MUOS terminals and the High Frequency Radios (HFR). TCM will procure 10 MUOS licenses as test articles and then procure another 6,000 licenses once the capability passes testing. In FY17 TCM will be testing the HFR. All the other systems are currently in sustainment.

Networking on the Move (NOTM): NOTM will use an evolutionary acquisition strategy and pursue a competitive contract that leverages Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) technology to procure, sustain and meet emerging requirements. The design of the system provides for internal growth capability through an open system architecture enabling technology refresh to extend the system's life, maintain interoperability, Information Assurance (IA) compliance, and reduce costs due to Diminishing Manufacturing Sources and Material Shortages (DMSMS). It is envisioned that technology refresh will occur on the NOTM hardware and software periodically due to component obsolescence, user-driven requests for improvements, IA compliance, and mission-related requirements. Refresh will include investments to incorporate evolving capability to ensure compatibility with other systems, create lighter more efficient equipment, and keep pace with evolving software requirements. End-of-life equipment refresh is expected throughout the program's life cycle and may be managed through kit purchases, replacement through Engineering Change Proposals (ECPs), or as replacement parts as equipment is repaired.

Very Small Aperture Terminal (VSAT): As part of a SATCOM Systems Consolidation Strategy, the VSAT Family of Systems (FoS) is currently being modified to be capable of using military Ka (VSAT-S/M) and X (VSAT-L) frequency bands. The Consolidation Strategy also adds the requirement to enable the VSAT-L to interface with an External Antenna and provide a Quad Band Satellite Emulator. VSAT systems primarily support operations on costly commercial SATCOM bandwidth. VSAT-L operated on commercial Ku and military Ka-band and VSAT Small/Medium operated on commercial Ku-band. Fielding X-Band capability to the VSAT Large (VSAT-L), trailer mounted systems to alleviate reliance on commercial SATCOM bandwidth procurements is ongoing. Fielding military Ka-band on the VSAT Small and Medium (VSAT SM/M) is ongoing. Both are expected to be completely fielded in 4QFY16. The External Antenna will enable simultaneous inter and intra-theater wideband communications at the Major Subordinate Command level and higher. The Quad Band Satellite Emulator provides the ability to perform maintenance actions and training on VSAT FoS without the need for an actual satellite. The External Antenna Engineering Change Proposal (ECP) is planned for 4QFY15 followed by integration, testing, production and fielding (beginning in FY17). The Quad Band Satellite Emulator Engineering Change Proposal (ECP) is planned for Q2FY16 followed by the procurement of test articles and test and evaluation activities in FY17. Production and fielding is planned FY17-19.

Secure Mobile Anti-Jam Reliable Tactical-Terminal (SMART-T): SMART-T is an Army led, ACAT II program. The Marine Corps SMART-T has fielded the full Authorized Acquisition Objective (AAO) of 42 terminals and 35 AN/PSQ-17 Network Planning tools. SMART-T will be upgraded for compatibility with Advanced Extremely High Frequency (AEHF) waveforms and data rates and will replace the legacy SMART-T terminals. Out of warranty repair for legacy components will be executed, when

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necessary, using the Army National Maintenance Contract. The SMART-T program will procure and field its Terminal Operating Unit (TOU) upgrades and finish fielding its AEHF upgrades.

Tactical Wideband Communication Systems (TWTS): AN/TRC-170, the current Marine Corps troposcatter capability, was initially fielded in FY92. Next Generation Tropo-scatter (NGT) will replace AN/TRC-170 due to the system's obsolescence and an approved NGT Statement of Need requirement. The Marine Corps plans to join the US Army Program office via a Request to Participate letter thereby leveraging US Army's NGT efforts. Marine Corps RDT&E funds plan to include purchasing NGT prototypes and planning for Marine Corps unique developmental activity testing.

E. Performance Metrics

N/A

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NOTM Development	C/FFP	SSC-LANT : Charleston, SC	1.101	1.138	Sep 2015	0.000		0.000		-		0.000	0.000	2.239	-
NOTM Development	WR	SSC-Pacific : San Diego, CA	0.000	0.473	Mar 2015	0.256	Mar 2016	1.151	Jan 2017	-		1.151	0.000	1.880	-
NOTM HMSAS	WR	SSC-Pacific : San Diego, CA	0.000	0.100	Apr 2015	0.000		0.000		-		0.000	0.000	0.100	-
NOTM SWAP	MIPR	DTIC : Fort Belvoir, VA	0.178	0.220	Apr 2015	0.000		0.000		-		0.000	0.000	0.398	-
NOTM CBT	C/FFP	MCSC : Quantico, VA	0.000	0.019	Sep 2015	0.000		0.000		-		0.000	0.000	0.019	-
NOTM-A	C/FFP	TBD : TBD	0.000	0.000		0.000		3.650	Feb 2017	-		3.650	0.000	3.650	-
NOTM-ITV	C/FFP	TBD : TBD	0.000	0.000		0.000		2.700	Feb 2017	-		2.700	0.000	2.700	-
TCM HFR prototypes	C/FFP	SSC-LANT : Charleston, SC	0.555	0.000		0.000		0.200	Nov 2016	-		0.200	0.000	0.755	-
TCM Assets	C/FFP	MCSC : Quantico, VA	0.000	0.000		0.100	Jan 2016	0.000		-		0.000	0.000	0.100	-
TCM Test Antennas	C/FFP	MCSC : Quantico, VA	0.000	0.000		0.050	Mar 2016	0.000		-		0.000	0.000	0.050	-
TWTS NGT	C/FFP	CECOM : Aberdeen, VA	0.000	0.000		0.950	May 2016	0.923	May 2017	-		0.923	0.000	1.873	-
Prior Years Cumulative Funding	Various	Various : Various	9.986	0.000		0.000		0.000		-		0.000	0.000	9.986	-
Subtotal			11.820	1.950		1.356		8.624		-		8.624	0.000	23.750	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SMART-T IMS Support	C/FFP	NAWC TSD : Orlando, FL	0.000	0.250	Aug 2015	0.000		0.000		-		0.000	0.000	0.250	-

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SMART-T Support	WR	SSC-LANT : Charleston, SC	0.000	0.177	Apr 2015	0.191	Feb 2016	0.189	Feb 2017	-		0.189	0.000	0.557	-
TCM VRC-114 Engineering Support	C/FFP	SSC-L : Charleston, SC	0.000	0.000		0.094	Jan 2016	0.000		-		0.000	0.000	0.094	-
TCM Engineering Support	C/FFP	NAVAIR : Pax River, MD	0.000	0.108	Sep 2015	0.103	Mar 2016	0.000		-		0.000	0.000	0.211	-
TCM JENM Engineering Support	C/FFP	SSC-P : San Diego, CA	0.000	0.000		0.003	Mar 2016	0.000		-		0.000	0.000	0.003	-
VSAT Antenna Dev/Int	MIPR	CECOM : Aberdeen, MD	0.000	0.325	Aug 2015	0.000		0.000		-		0.000	0.000	0.325	-
VSAT Engineering Support	WR	SSC-LANT : Charleston, SC	0.000	0.000		0.239	Feb 2016	0.452	Feb 2017	-		0.452	0.000	0.691	-
VSAT GUI Support	MIPR	CECOM : Aberdeen, MD	0.000	0.044	Mar 2015	0.133	Aug 2016	0.000		-		0.000	0.000	0.177	-
TWTS Govt Eng Support	WR	NSWC : Dahlgren, VA	0.000	0.030	May 2015	0.000		0.000		-		0.000	0.000	0.030	-
TWTS Engineering Support	C/CPFF	NSWC : Dahlgren, VA	0.000	0.200	Jul 2015	0.000		0.000		-		0.000	0.000	0.200	-
TWTS Engineering Support	WR	SSC-P : San Diego, CA	0.000	0.000		0.201	Feb 2016	0.463	Feb 2017	-		0.463	0.000	0.664	-
Prior Years Cumulative Funding	Various	Various : Various	0.213	0.000		0.000		0.000		-		0.000	0.000	0.213	-
Subtotal			0.213	1.134		0.964		1.104		-		1.104	0.000	3.415	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NOTM Vehicle Integration Testing	WR	SSC-LANT : Charleston, SC	0.000	0.828	Apr 2015	0.000		0.000		-		0.000	0.000	0.828	-
NOTM Engineering Support/X-Band SATCOM	WR	SSC-PAC : San Diego, CA	0.000	1.850	Oct 2014	0.000		0.000		-		0.000	0.000	1.850	-

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NOTM BMDL	WR	NSWC Dahlgren : Dahlgren, VA	0.000	0.201	Mar 2015	0.000		0.000		-		0.000	0.000	0.201	-
NOTM EOL	C/FFP	SSC_LANT : Charleston, SC	0.000	0.000		0.236	Mar 2016	0.236	Mar 2017	-		0.236	0.000	0.472	-
NOTM Power Distribution Retrofit ECP	C/FFP	DTIC : Fort Belvoir, VA	0.000	0.000		0.126	Dec 2015	0.095	Dec 2016	-		0.095	0.000	0.221	-
NOTM SWAP Reduction ECP	C/FFP	SSC-LANT : Charleston, SC	0.000	0.000		0.000		1.254	Feb 2017	-		1.254	0.000	1.254	-
TWTS (NGT)	C/FFP	US Army, CECOM : Aberdeen, MD	0.000	0.000		0.183	May 2016	0.310	May 2017	-		0.310	0.000	0.493	-
TCM HFR environmental testing	WR	US Army, CECOM : Aberdeen, MD	0.000	0.000		0.000		0.300	Mar 2017	-		0.300	0.000	0.300	-
TCM MRC-145B M&S	C/CPFF	Nevada Automotive Test Center : Stafford, VA	0.000	0.095	Jun 2015	0.000		0.000		-		0.000	0.000	0.095	-
TCM HF Testing	WR	SSC Command : San Diego, CA	0.000	0.000		0.000		0.238	May 2017	-		0.238	0.000	0.238	-
TCM MUOS Test	WR	ATC : Aberdeen, Md	0.000	0.000		0.150	Jul 2016	0.000		-		0.000	0.000	0.150	-
TCM Test Support	WR	MCTSSA : Camp Pendleton, California	0.139	0.000		0.000		0.150	Nov 2016	-		0.150	0.000	0.289	-
TCM EMI Testing	WR	NSWC Dahlgren : Dahlgren, VA	0.074	0.020	Mar 2015	0.000		0.100	Jun 2017	-		0.100	0.000	0.194	-
VSAT Testing	MIPR	TBD : TBD	0.000	0.000		0.336	Aug 2016	0.250	Aug 2017	-		0.250	0.000	0.586	-
Prior Years Cumulative Funding	Various	Various : Various	7.217	0.000		0.000		0.000		-		0.000	0.000	7.217	-
Subtotal			7.430	2.994		1.031		2.933		-		2.933	0.000	14.388	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

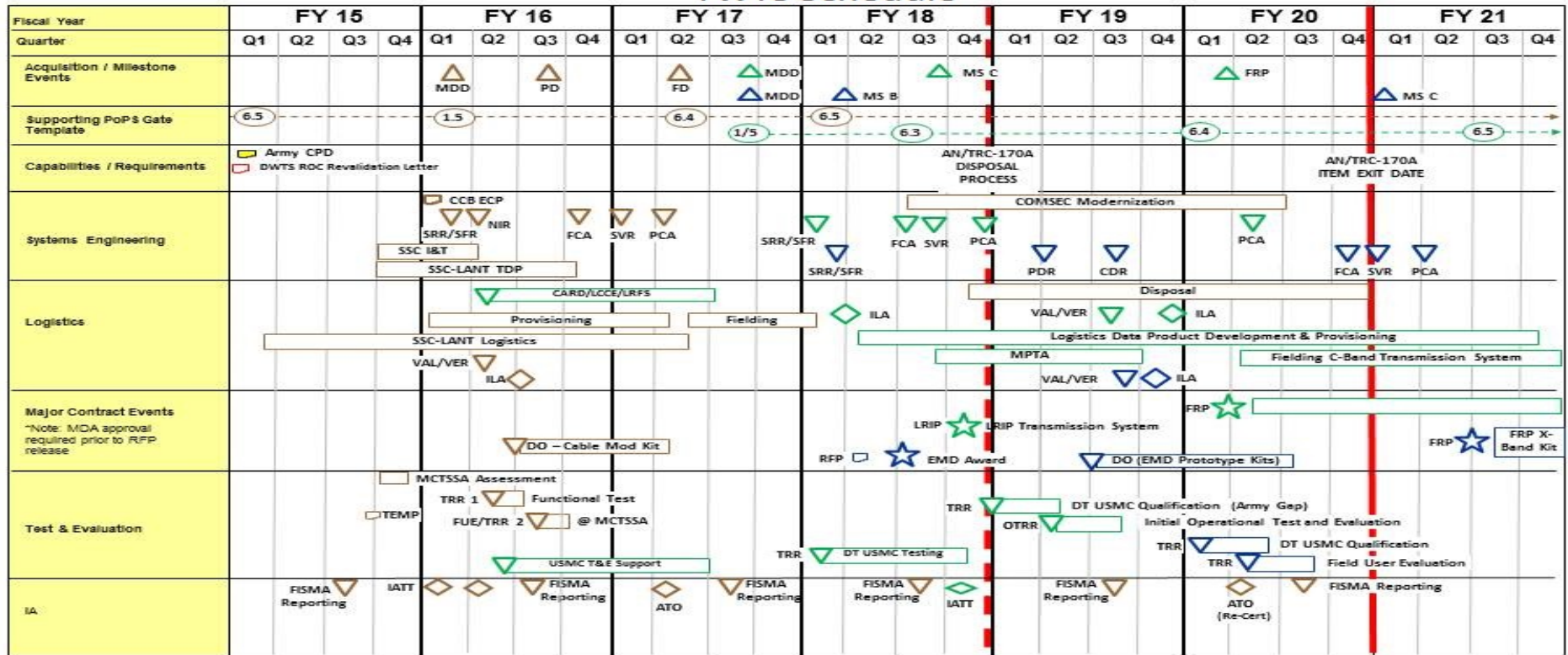
Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2275 / Marine Corps Tactical Radio Systems



TWTS Schedule



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

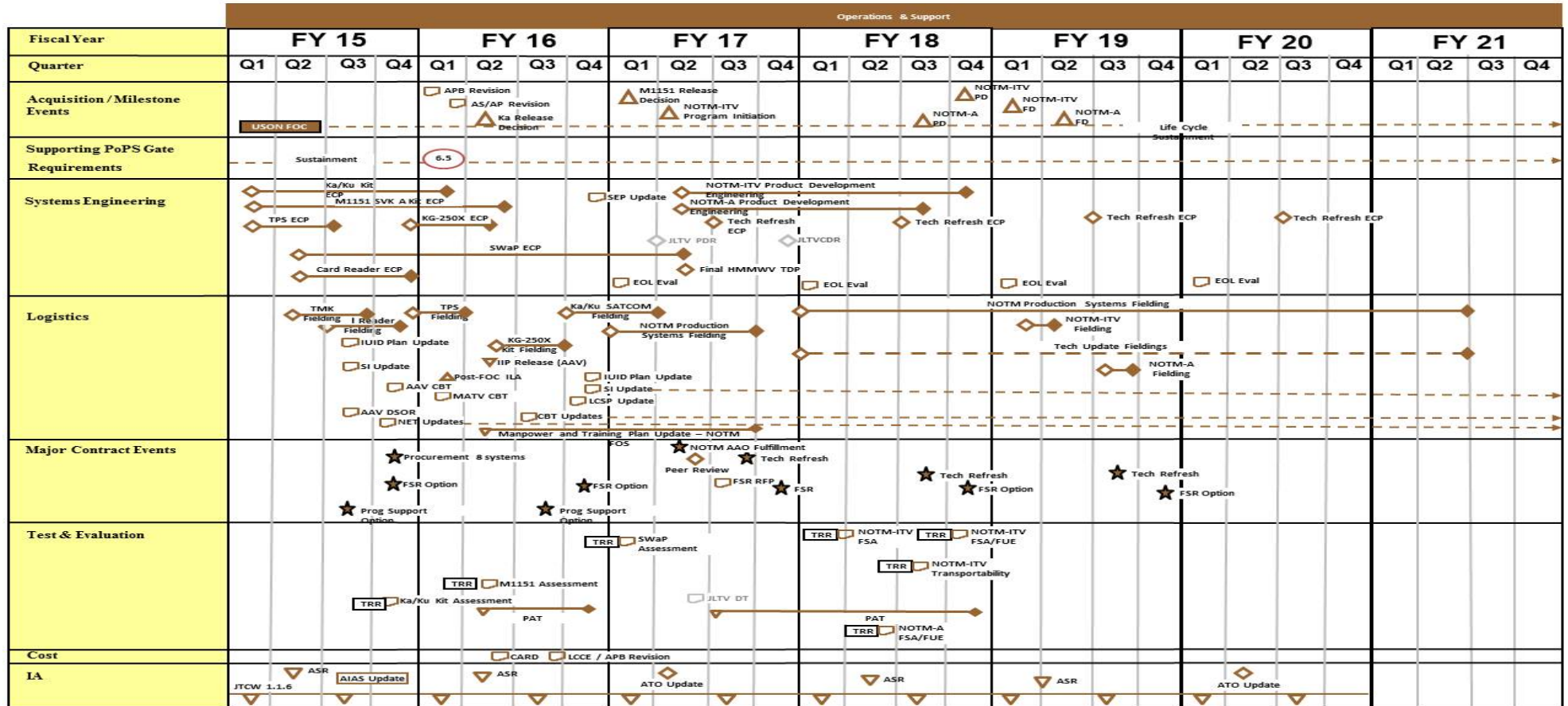
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2275 / Marine Corps Tactical Radio Systems

Program Schedule-NOTM



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2275 / Marine Corps Tactical Radio Systems



Program Schedule SMART-T

Operations & Support

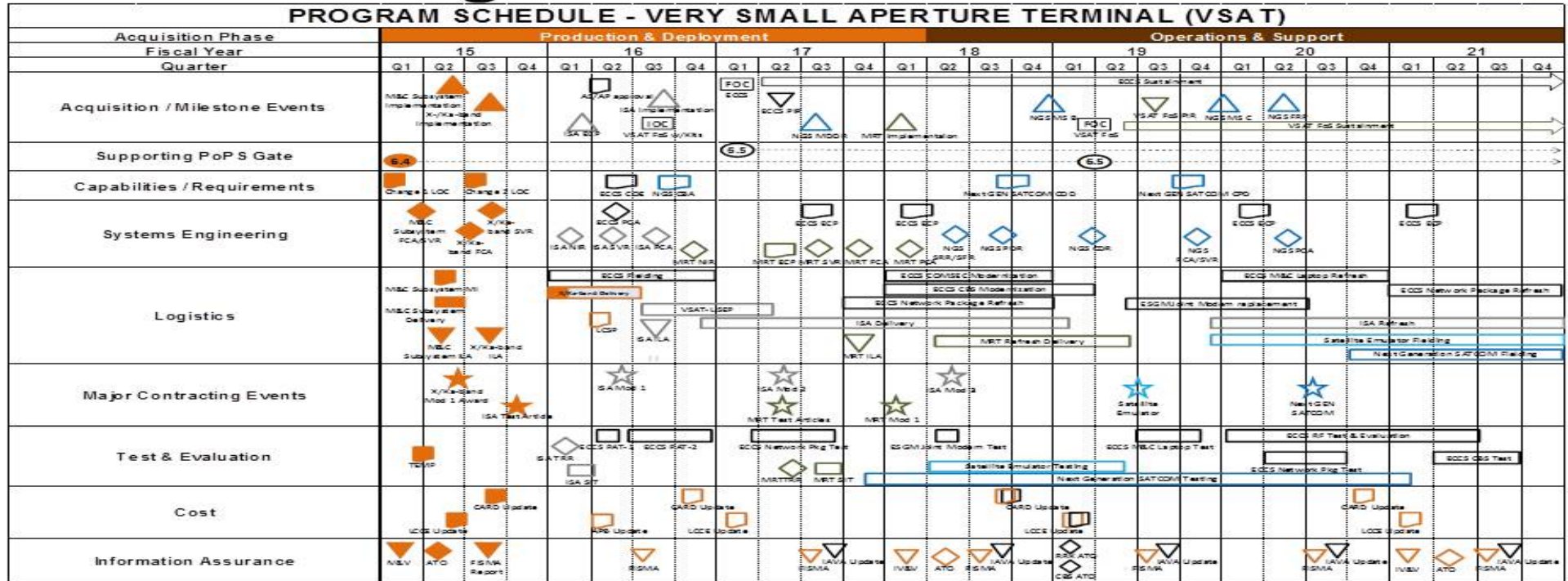
Fiscal Year	15				16				17				18				19				20				21			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Acquisition/Milestone Events					▲ AEHF UPGRADEFOC								Life Cycle Sustainment															
Supporting PoPS Gate Template					6.5																							
Capabilities/Requirements																												
Systems Engineering	TOU Tech Refresh				Ethernet Repeater ECP				TMP SS SW Tech Refresh ECP				TMP SS HW Tech Refresh ECP				Terminal Refresh ECP Implementation											
Logistics	PYQ-15 Fielding				TOU Fielding				AN/PYQ-15 Tech Refresh ECP Implementation																			
Major Contract Events					★ WIN-T TOU				★ AFSPACE TMPSS				★ AFSPACE TMPSS								★ WIN-T Terminal							
Test & Evaluation					▭ INC 7.8 OP 8 Acceptance												▭ INC X.LX OP 8 Acceptance											
Cost													CARD UPDATE				LCCE UPDATE											
IA	◇ AN/TSC-154A/TCID ATO				◇ AEHF SS ATO								◇ AN/TSC-154A/TCID ATO				◇ AEHF SS ATO				◇ AN/TSC-154A/TCID ATO				◇ AEHF SS ATO			

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2275 / Marine Corps Tactical Radio Systems

Program Schedule - VSAT



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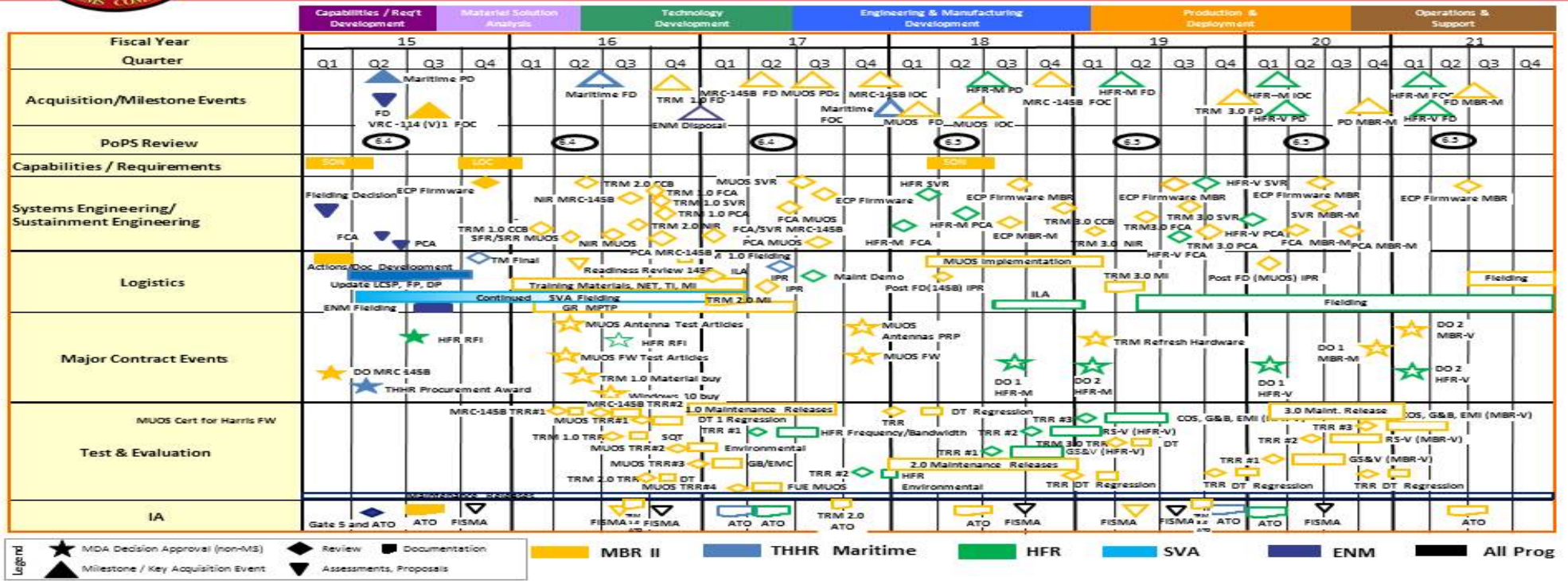
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2275 / Marine Corps Tactical Radio Systems



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2275 / <i>Marine Corps Tactical Radio Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2275				
SMART-T AEHF FOC	2	2016	2	2016
VSAT IOC	3	2016	3	2016
VSAT FOC	1	2019	2	2019
TCM Maritime Fielding Decision	2	2016	2	2016
TCM MRC-145B Fielding Decision	2	2017	2	2017
TCM MUOS Fielding Decision	1	2018	1	2018
TCM HFR-M Procurement Decision	3	2018	3	2018
NOTM Ka SATCOM ECP	1	2015	1	2016
NOTM M1151 SVK A Kit ECP	1	2015	2	2016
NOTM M1151 Assessment	2	2016	2	2016
TWTS MRC-142 FD	2	2017	2	2017
TWTS NGT Inc 1 & Inc 2 MDDs	3	2017	3	2017
TWTS NGT Inc 2 MS B	1	2018	1	2018
TWTS NGT Inc 1 MS C	3	2018	3	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>				Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2276: <i>Comms Switching and Control Sys</i>	39.081	1.754	2.006	2.216	-	2.216	3.277	3.249	3.187	3.258	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$0.322 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

(U) Network Planning & Management (NPM), is a portfolio of communications planning and Network Management applications for use throughout the Marine Air-Ground Task Force (MAGTF). NPM consists of items such as the Systems Planning Engineering and Evaluation Device (SPEED). NPM provides the Marine Forces (MARFOR) component planners with the ability to conduct high-level planning; detailed planning and engineering; monitoring; control and reconfiguration; and spectrum planning and management in support of Combatant Commander (COCOM) and Commander, Joint Task Force (CJTF) operations. SPEED provides High Frequency (HF) predictions, Line of Site (LOS) propagation, Radio Coverage Analysis (RCA), Satellite planning, Command and Control Personal Computer (C2PC) track interface, interference and de-confliction analysis, spectrum management, Radio Guard Charts, Comm-On-The-Move (COTM), and T/E (training & education) and force structure management.

(U) Tactical Voice Switching System (TVSS): Formerly known as Transition Switch Module (TSM), TVSS consists of three systems that provide a flexible Unit Level Switch that replaces legacy Tri-Tac switches with current commercial technology, providing maneuver elements with improved voice/data switching, data transport and bandwidth management capabilities. This program maintains USMC joint interoperability as all Services transition to Commercial Off-The-Shelf (COTS) switching technologies.

(U) Tactical Data Network (TDN) Data Distribution System - Modular (DDS-M): The DDS-M provides the Commander a modular, integrated, and interoperable Internet Protocol (IP)- based LAN and WAN data networking capability that forms the data communications backbone and data communications support to organizations within a MAGTF. The DDS-M provides extension of the Defense Information System Network (DISN), Secret Internet Protocol Router Network (SIPRNet), and Sensitive But Unclassified (SBU) Non-secure Internet Protocol Router Network (NIPRNet), a Coalition networking capability, access to strategic, supporting establishments, joint and other service component tactical data networks for Marine Corps Tactical Data Systems (TDSs), and other DDS-Ms. The DDS-M provides Marine Corps maneuver elements with a modular and scalable IP data transport capability that will replace, supplement, and be used with existing legacy data systems through the integration of computers, routers, data switches and cabling, Enhanced Position Location and Reporting System (EPLRS) radio net interface units, MODEMS, link encryption devices, and patch panels. Uninterrupted Power Supplies (UPS) provide for emergency power and continuity of operations. The DDS-M can operate from the SBU up to the TOP SECRET/SENSITIVE COMPARTMENTED INFORMATION (TS/SCI) level and contains integral In-line Network Encryption (INE) device supporting IP Security (IPSec) and Virtual Private Networking (VPN).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2276 / Comms Switching and Control Sys

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: NPM: Product Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to provide additional enhancements and capabilities within the System Planning Engineering and Evaluation Device (SPEED) software testing.</p> <p>FY 2016 Plans: Continue to provide additional enhancements and capabilities within the System Planning Engineering and Evaluation Device (SPEED) software testing.</p> <p>FY 2017 Base Plans: Continue to provide additional enhancements and capabilities within the System Planning Engineering and Evaluation Device (SPEED) software testing.</p> <p>FY 2017 OCO Plans: N/A</p>	0.193	0.985	0.914	0.000	0.914
	-	-	-	-	-
<p>Title: TVSS: Engineering and Program Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Funding provided Joint Interoperability Testing.</p> <p>FY 2016 Plans: Continued interoperability testing at JITC.</p> <p>FY 2017 Base Plans: Initiate engineering, testing and technical support for end of life/end component upgrades.</p> <p>FY 2017 OCO Plans: N/A</p>	0.241	0.265	0.084	0.000	0.084
	-	-	-	-	-
<p>Title: TVSS: Test & Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p>	0.000	0.000	0.098	0.000	0.098
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A FY 2017 Base Plans: Initiate test and evaluation for end of life/end component upgrades. FY 2017 OCO Plans: N/A					
Title: TVSS: Management Services Articles:	0.000 -	0.000 -	0.087 -	0.000 -	0.087 -
FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Engineering, testing and technical support for Information Assurance and end of life/end of support component upgrades. FY 2017 OCO Plans: N/A					
Title: DDS-M: Test and Evaluation Articles:	0.236 -	0.105 -	0.108 -	0.000 -	0.108 -
FY 2015 Accomplishments: Funded joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises. FY 2016 Plans: Continue to support joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises. FY 2017 Base Plans: Continue support for joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises. FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: DDS-M: Product Development Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: Development and implementation of required hardware updates such as switches and servers. FY 2017 Base Plans: Continues development and implementation of required hardware updates. FY 2017 OCO Plans: N/A	0.000 -	0.152 -	0.388 -	0.000 -	0.388 -
Title: DDS-M: Management Services Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Funds will support FFRDC systems engineering, interoperability analysis, acquisition planning, support for technology research and obsolescence. FY 2017 OCO Plans: N/A	0.000 -	0.000 -	0.237 -	0.000 -	0.237 -
Title: DDS-M: Engineering and Program Support Articles: FY 2015 Accomplishments: Funded systems engineering, interoperability analysis, acquisition planning and integration, and support for technology research and obsolescence. FY 2016 Plans:	1.084 -	0.499 -	0.300 -	0.000 -	0.300 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue to support systems engineering, interoperability analysis, acquisition planning and integration, and support for technology research and obsolescence. FY 2017 Base Plans: Continue to support systems engineering, interoperability analysis, acquisition planning and integration, and support for technology research and obsolescence. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.754	2.006	2.216	0.000	2.216

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/4634-1: TVSS	0.000	6.011	20.844	-	20.844	14.050	10.150	10.365	10.567	Continuing	Continuing
• PMC/4634-5: DDS-M	50.197	55.111	43.967	-	43.967	56.713	55.400	48.209	49.148	Continuing	Continuing

Remarks

D. Acquisition Strategy

(U) Network Planning and Management (NPM): NPM will maximize use of existing Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) products. NPM will continue to be upgraded as technology advances. Major focus will be on the incorporation of additional capabilities and functionality into the SPEED software to meet user requirements. R&D effort will focus on the development, integration, and testing of improved versions of existing capabilities.

(U) Tactical Voice Switching System (TVSS) (formerly Transition Switch Module (TSM)): TVSS will maximize use of existing COTS, GOTS, and Government-Furnished Equipment (GFE). TVSS hardware and software will continue to be upgraded and improved as technology advances. Major focus will be on interoperability and compatibility with existing systems and components in the Marine Corps, as well as Joint and Coalition forces. R&D effort will focus on integration and testing of improved versions of existing components.

(U) TDN Data Distribution System - Modular (DDS-M): DDS-M will maximize use of existing COTS, GOTS, and GFE. DDS-M hardware and software will continue to be upgraded and improved as technology advances. Major focus will be on interoperability and compatibility with existing systems and components in the Marine Corps, as well as Joint and Coalition forces. R&D effort will focus on integration and testing of improved versions of existing components. DDS-M may reuse other Services' development and utilize external contracts that satisfy requirements and analysis of alternatives.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2276 / Comms Switching and Control Sys
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NPM (SPEED S/W Development)	C/FFP	MCSC : TBD	0.000	0.000		0.985	Apr 2016	0.914	Apr 2017	-		0.914	Continuing	Continuing	Continuing
NPM (SPEED S/W Development)	C/CPFF	NSWC : Crane, IN	0.000	0.075	Apr 2015	0.000		0.000		-		0.000	0.000	0.075	-
NPM (SPEED S/W Development)	C/CPFF	NSWC2 : Crane, IN	0.000	0.118	Jun 2015	0.000		0.000		-		0.000	0.000	0.118	-
DDS-M ECP	C/CPFF	SSC-LANT : Charleston	1.775	0.000		0.152	Mar 2016	0.388	Feb 2017	-		0.388	0.000	2.315	-
Prior Year Cumulative Funding	Various	Various : Various	26.153	0.000		0.000		0.000		-		0.000	0.000	26.153	-
Subtotal			27.928	0.193		1.137		1.302		-		1.302	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TVSS Support	C/CPFF	SSC-LANT : Charleston, SC	0.000	0.000		0.158	Mar 2016	0.084	Dec 2016	-		0.084	0.000	0.242	-
TVSS Support	WR	SSC-PAC : San Diego	0.000	0.241	Jun 2015	0.107	Jan 2016	0.000		-		0.000	0.000	0.348	-
DDS-M Support	C/CPFF	SSC-LANT : Charleston, SC	2.531	0.397	Apr 2015	0.300	Feb 2016	0.300	Feb 2017	-		0.300	0.000	3.528	-
DDS-M Engineering Support	WR	SSC-PAC : San Diego, CA	0.000	0.000		0.199	Feb 2016	0.000		-		0.000	0.000	0.199	-
DDS-M Engineering Support	C/CPFF	SSC-LANT : Charleston, SC	0.000	0.300	Apr 2015	0.000		0.000		-		0.000	0.000	0.300	-
DDS-M Safety Support	C/CPFF	NSWC : Indian Head, MD	0.000	0.231	Apr 2015	0.000		0.000		-		0.000	0.000	0.231	-
DDS-M Information Assurance	C/CPFF	NSWC : Dahlgren, VA	0.000	0.156	Jan 2015	0.000		0.000		-		0.000	0.000	0.156	-
Prior Year Cumulative Funding	Various	Various : Various	1.840	0.000		0.000		0.000		-		0.000	0.000	1.840	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206313M / Marine Corps Comms Systems				2276 / Comms Switching and Control Sys							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			4.371	1.325		0.764		0.384		-		0.384	0.000	6.844	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TVSS Test & Evaluation	WR	JITC : Ft. Huachuca, AZ	0.000	0.000		0.000		0.098	Jun 2017	-		0.098	0.000	0.098	-
DDS-M Testing	WR	SSC PAC : San Diego, CA	0.000	0.166	Jun 2015	0.000		0.000		-		0.000	0.000	0.166	-
DDS-M Test & Evaluation	WR	JITC : Ft. Huachuca, AZ	0.000	0.070	Jun 2015	0.105	Mar 2016	0.108	Apr 2017	-		0.108	0.000	0.283	-
Prior Year Cumulative Funding	Various	Various : Various	1.356	0.000		0.000		0.000		-		0.000	0.000	1.356	-
Subtotal			1.356	0.236		0.105		0.206		-		0.206	0.000	1.903	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TVSS Engineering Support	FFRDC	MITRE : Stafford, VA	1.034	0.000		0.000		0.087	Dec 2016	-		0.087	0.000	1.121	-
DDS-M Engineering Support	FFRDC	MITRE : Stafford, VA	0.275	0.000		0.000		0.237	Dec 2016	-		0.237	0.000	0.512	-
Prior Year Cumulative Funding	Various	Various : Various	4.117	0.000		0.000		0.000		-		0.000	0.000	4.117	-
Subtotal			5.426	0.000		0.000		0.324		-		0.324	0.000	5.750	-
			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract				
Project Cost Totals			39.081	1.754	2.006	2.216	-	2.216	-	-	-				

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

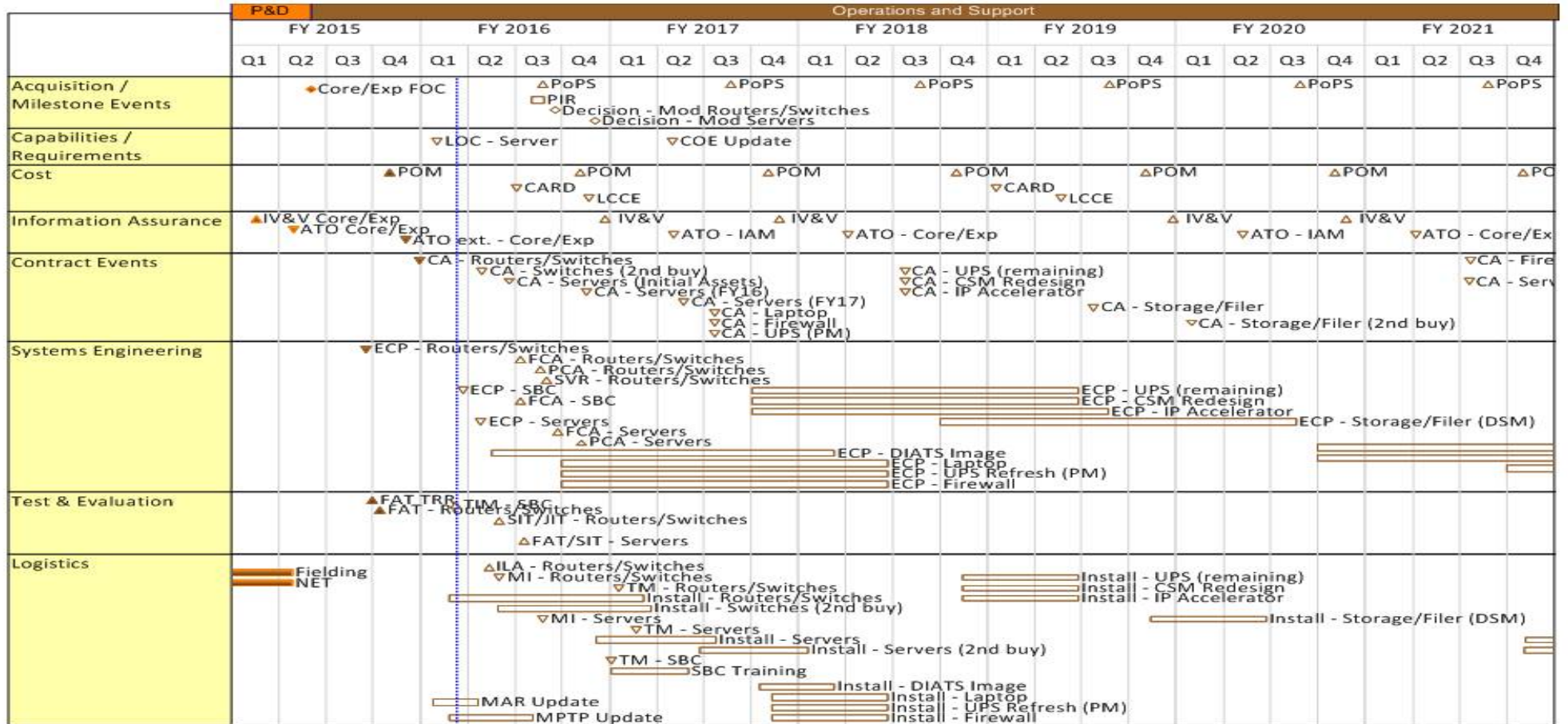
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2276 / Comms Switching and Control Sys

DDS-M IMS



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Snapshot Date: 12/10/2015

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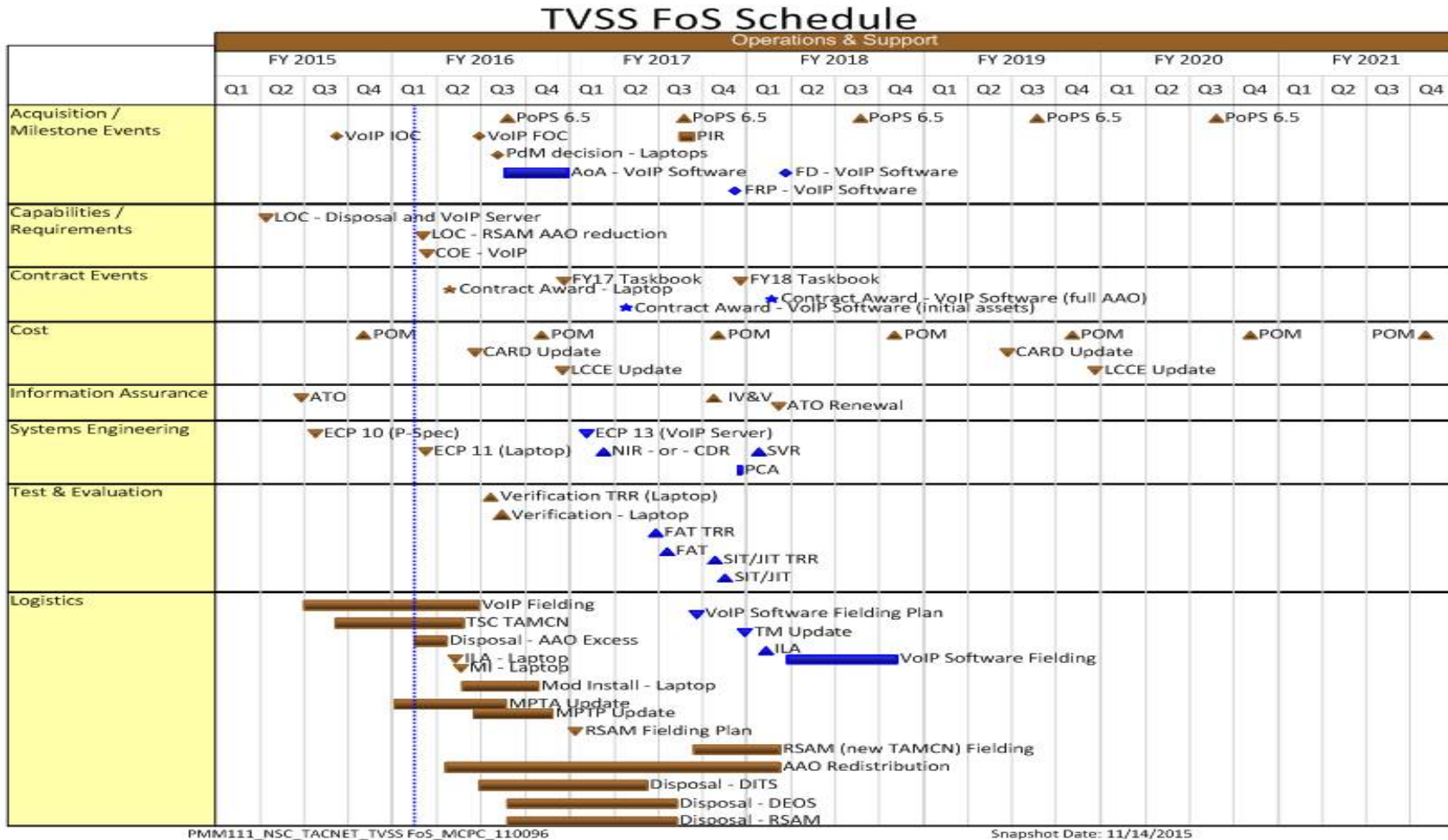
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms Systems

Project (Number/Name)
2276 / Comms Switching and Control Sys



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2276 / Comms Switching and Control Sys
Systems

Network Planning and Management (NPM)



Fiscal Year	Operations & Support																															
	FY 15				FY 16				FY 17				FY 18				FY 19				FY 20				FY 21							
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Acquisition / Milestone Events				◆		◆		◆	◆			◆		◆		◆		◆		◆		◆		◆		◆		◆				
Supporting PoPS Gate Template	Life Cycle Sustainmen. IPR																															
Capabilities / Requirements					◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Systems Engineering				◆				◆	◆			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆			◆
Logistics				▽				▽				▽				▽				▽				▽				▽				▽
Major Contract Events		★			★																											
Test & Evaluation																																
IA				IA Scan	IA Scan			IA Scan	◆			IA Scan	IA Scan			IA Scan	IA Scan			IA Scan	◆			IA Scan	IA Scan			IA Scan	IA Scan			IA Scan

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2276 / <i>Comms Switching and Control Sys</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2276				
DDS-M ECP DIATS Image	2	2016	1	2018
DDS-M Fielding Routers/Switches	1	2016	1	2017
DDS-M CA Switches (2nd Buy)	2	2016	2	2016
DDS-M PIR	3	2016	3	2016
DDS-M FCA SBC/Routers/Switches	3	2016	3	2016
DDS-M CA Servers (FY16)	4	2016	4	2016
DDS-M ECP Laptop/Firewall/UPS Refresh	4	2016	2	2018
DDS-M Fielding Decision Routers/Switches	3	2016	3	2016
DDS-M Fielding Decision Servers	4	2016	4	2016
DDS-M CA Servers (FY17)	2	2017	2	2017
DDS-M CA Laptops/Firewall/UPS	3	2017	3	2017
TVSS ECP 11 Laptop	1	2016	1	2016
TVSS (TSM) ECP 10 P-Spec	3	2015	3	2015
TVSS VoIP Fielding	3	2015	2	2016
TVSS AoA	3	2016	4	2016
NPM PAT	3	2017	3	2017
NPM FAT	4	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>				Project (Number/Name) 2277 / <i>System Engineering and Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>2277: System Engineering and Integration</i>	30.054	11.946	5.085	4.861	-	4.861	4.866	4.855	5.247	5.361	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funds for engineering, test, and evaluation activity, which ensures that the systems being developed within the Program Element (PE) employ consistent standards for interoperability and to the maximum extent feasible use of hardware and software which is uniform and standard across programs.

Expeditionary Energy Office (E2O): Energy is a top priority for the USMC and one of the six pillars of Modernization for the Corps identified by the Commandant. In 2009, the Commandant established the USMC Expeditionary Energy Office (E2O), with the mission to analyze, develop, and direct the Marine Corps' energy strategy in order to optimize expeditionary capabilities across all warfighting functions. E2O's role is to advise the Marine Requirements Oversight Council (MROC) on all energy and resource related requirements, acquisitions, and programmatic decisions. This office and funding directly support execution of the USMC Expeditionary Energy Strategy and Implementation Plan (Mar 2011), and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment (Sep 2011), as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. The Marine Corps program aligns with the Commandant's Planning Guidance 2010, the National Defense Authorization Act 2009, DoD directives and SECNAV goals. This funding will support the achievement of the Strategy, and the activities of the USMC Experimental Forward Operating Base process, managed by the E2O.

Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a Joint Chiefs-of-Staff (JCS)/DoD-mandated program for joint development, implementation, and testing of tactical data links and US Message Text Format (MTF) under the direction of the Defense Information Systems Agency (DISA) and Office of the Secretary of Defense/Networks and Information Integration (OASD/NII) per the Commander Joint Chiefs of Staff (CJCSI) 6610.01C and CJCS16241.04 for US Military Tactical Forces (USMTF). This effort also covers interoperability and testing of tactical message standards such as MILSTD 6017 Variable Message Format used between the US Army and USMC; and Coalition message formats the Joint Command, Control, Consultation Information Exchange Data Model (JC3IEDM).

Systems Engineering, Integration and Coordination (SEIC) is MCSC Chief Engineer's systems engineering and integration program. SEIC provides the decision support tools and engineering analysis resources needed to assess, identify and resolve MAGTF inter-systems' SoS issues and challenges. SEIC supports DC CD&I, DC PP&O, DC A, DC I&L, DC M&RA, HQMC C4, and HQMC INT in the analysis, evaluation, and assessment of MAGTF Systems and SoS requirements. SEIC centralized management of C4ISR programs allows the implementation of systems engineering certification process in support of milestone decision approval; a requirements and functional analysis process enabling system of systems engineering and an overarching C4ISR systems architecture, and a product realization process to support budget decisions. SEIC engineering conducts functional analyses for emergent system of systems challenges and ensures seamless integration and maximum interoperability of materiel across USMC, Naval, Joint, and DoD programs consistent with the Commandant's Vision and Strategy 2025.

Marine Civil Information Management System (MARCIMS) is a system of systems comprised of people, process and technology that operates in the full Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment. It is a force multiplier for the commander that allows him to leverage the process of Planning,

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>
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Collection, Consolidation, Analysis, Production, and sharing of civil information in order to support the visualization and understanding of the civil environment to the military commander's decision making process.

Public Affairs System (PAS) provides the Marine Air Ground Task Force (MAGTF) and the broader Marine Corps the capability to research, understand and affect the information environment. PA Marines and Systems enable commanders at all levels and across the range of military operations to engage domestic and foreign publics whose trust, confidence, and understanding are mission critical. The Public Affairs Systems (PAS) AAP identifies and fields materiel solutions required to research and plan communication initiatives, acquire still and video visual information, produce and disseminate communication products, and assess the effects of communication initiatives within the information environment. The program maintains an evolutionary approach to acquisitions, and leverages commercial industry-standard non-developmental items to provide the best value to the Marine Corps, while keeping PA Marines appropriately equipped to understand and affect the information environment. This effort supports research and evaluate solutions to modernize the Public Affairs Still Acquisition System into a single handheld device with the capability to acquire, edit and transmit still and video imagery and engage publics via traditional and social media.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Expeditionary Energy Office (E2O)	2.471	2.213	2.159	0.000	2.159
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Continued to support the USMC Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. Using these priority roadmaps, E2O will invest in R&D programs to advance Strategy goals. Priority areas for investment include, but are not limited to: Energy harvesting; hybrid power; efficient heating and cooling of people, equipment and water; energy storage; energy efficient vehicles; energy metering and monitoring and decision tools; energy efficient shelters and sustainment.					
FY 2016 Plans:					
Continue to support the USMC Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. Using these priority roadmaps, E2O will invest in R&D programs to advance Strategy goals. Priority areas for investment include, but are not limited to: Energy harvesting; hybrid power; efficient heating and cooling of people, equipment and water; energy storage; energy efficient vehicles; energy metering and monitoring and decision tools; energy efficient shelters and sustainment.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016																				
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>																					
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)																							
Continue to support the USMC Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. Using these priority roadmaps, E2O will invest in R&D programs to advance Strategy goals. Priority areas for investment include, but are not limited to: Energy harvesting; hybrid power; efficient heating and cooling of people, equipment and water; energy storage; energy efficient vehicles; energy metering and monitoring and decision tools; energy efficient shelters and sustainment.																							
FY 2017 OCO Plans: N/A																							
Title: JINTACCS: JCS and DoD CIO Data Links Testing																							
Articles:																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%;">FY 2015</th> <th style="width: 10%;">FY 2016</th> <th style="width: 10%;">FY 2017 Base</th> <th style="width: 10%;">FY 2017 OCO</th> <th style="width: 10%;">FY 2017 Total</th> </tr> </thead> <tbody> <tr> <td></td> <td align="right">3.585</td> <td align="right">0.425</td> <td align="right">0.598</td> <td align="right">0.000</td> <td align="right">0.598</td> </tr> <tr> <td></td> <td align="right">-</td> <td align="right">-</td> <td align="right">-</td> <td align="right">-</td> <td align="right">-</td> </tr> </tbody> </table>							FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total		3.585	0.425	0.598	0.000	0.598		-	-	-	-	-
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total																		
	3.585	0.425	0.598	0.000	0.598																		
	-	-	-	-	-																		
Description: Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a United States military program for the development and maintenance of tactical information exchange configuration items (CIs) and operational procedures. It was originated to ensure that the command and control (C2 and C3) and weapons systems of all US military services and NATO forces would be interoperable. JINTACCS resides at MARCORSYSCOM under Systems Engineering, Interoperability Architectures, and Technology. Created as a non-acquisition R&D engineering program it provides for critical engineering services in several areas. JINTACCS is essential to USMC development and maintenance of tactical data exchange standards (Link 16, VMF, MTF, etc.), maintenance of C2 systems interoperability issues, development of Net Centric standards (UCore, C2 Core, XML, Web Services) to meet requirements of DoD/USMC Net Centric Data Strategy, and participation in Marine Corps, Joint, and Coalition Interoperability Certification testing to DoD/JCS/USMC/NATO requirements in an ever-changing cyber environment. Requirements annotated in IT Budget Submit (NC-36).																							
FY 2015 Accomplishments: -Continued to review and update all IT Standards applicable to the USMC and maintain the architectural data environment to ensure all developed solution architectures are associated with the appropriate technical IT standards in their DoDAF Standards View. Lead the Army - Marine Corps C2 interoperability Systems Engineering IPT to align the use of tactical messaging standards to create interoperability between the DoD ground force systems FBCB2/JTCW (VMF), GCCS (OTH Gold), TBMCS/AFATDS (USMTF), and aviation tactical data links (Link 16/22).																							

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Supported HQMC Director C4 in the development of implementation plans for the Marine Corps to meet its Service level requirements mandated by the DoD Net Centric Data Strategy and participated in the Joint development of XML data standards to enable tactical data exchanges in C2 systems.</p> <p>-Expanded to incorporate the ability to use Tactical Service Oriented approaches to mediate data across multiple environments/domains (Air/Mobile platform/Dismounted/Stationary command posts).</p> <p>-Lead the development of data model converter applications to create Standard Agreement 4677 on interoperability between the NATO JC3IEDM data model to the JTCW (VMF) system allowing coalition interoperability at the dismounted level.</p> <p>-Initiated development of a NATO Coalition architecture to engineer interoperability of battalion and below forces to potentially expand the use of the STANAG in a Federated Mission Network (FMN)/Mission Partner Environment (MPE).</p> <p>-Continued to coordinate NATO interoperability through as the USMC lead for the Coalition Interoperability Assurance and Validation (CIAV) Working Group to identify and assess interoperability issues from current theaters of operations. A new coalition battle lab network (CFBLNET) connection was installed at MCTSSA to enable remote coalition testing and exercise participation.</p> <p>-Supported MARFORCYBER to integrate tactical network data exchanges into a Cyber Common Operational Picture to support the MARFORCYBER and MCNOSC watch officers and begin a Marine Corps Enterprise Network (MCEN) Cyber Vulnerability Assessment. A tactical cross-domain system was tested for integration to the garrison and tactical USMC enterprise network. Increase in 2015 funding is due to emergent requirement for a MCEN Cyber Vulnerability Assessment.</p> <p>FY 2016 Plans:</p> <p>-Continue to review and update all IT Standards applicable to the USMC and maintain the architectural data environment to ensure all developed solution architectures are associated with the appropriate technical IT standards in their DoDAF Standards View. Continue to lead the Army - Marine Corps C2 interoperability Systems Engineering IPT to align the use of tactical messaging standards to create interoperability between the DoD ground force systems FBCB2/JTCW (VMF), GCCS (OTH Gold), TBMCS/AFATDS (USMTF), and aviation tactical data links (Link 16/22).</p> <p>-Continue to lead the USMC involvement in NATO forums to ensure USMC tactical C2 systems remain interoperable.</p> <p>-Continue to participate in the development and maintenance of STANAG 4677 and associated architectures to expand interoperability to forces at battalion and below.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Develop and test the implementation of a Multi-Media Gateway (MMG) solution to bridge existing voice, video, and data network standards across tactical and garrison C2 networks through the continued engineering and certification of tactical cross-domain solutions.</p> <p>-Continue to engineer and architect garrison and tactical network standards to continue the MCEN Cyber Vulnerability assessment and support the risk reduction activities to integrate tactical network data exchanges into a Cyber Common Operational Picture to support MARFORCYBER, MCNOSC, and HQMC C4 initiatives through the continued development of MCEN architectures.</p> <p>FY 2017 Base Plans:</p> <p>-Continue to review and update all IT Standards applicable to the USMC and maintain the architectural data environment to ensure all developed solution architectures are associated with the appropriate technical IT standards in their DoDAF Standards View.</p> <p>-Continue to lead the Army - Marine Corps C2 interoperability Systems Engineering IPT to align the use of tactical messaging standards to create interoperability between the DoD ground force systems FBCB2/JTCW (VMF), GCCS (OTH Gold), TBMCS/AFATDS (USMTF), and aviation tactical data links (Link 16/22).</p> <p>-Continue to lead the USMC involvement in NATO forums to ensure USMC tactical C2 systems remain interoperable. Continue to participate in the development and maintenance of STANAG 4677 and associated architectures to expand interoperability to forces at battalion and below.</p> <p>-Continue to develop and test the implementation of a Multi-Media Gateway (MMG) solution to bridge existing voice, video, and data network standards across tactical and garrison C2 networks through the continued engineering and certification of tactical cross-domain solutions.</p> <p>-Continue to engineer and architect garrison and tactical network standards to continue the MCEN Cyber Vulnerability assessment and support the risk reduction activities to integrate tactical network data exchanges into a Cyber Common Operational Picture to support MARFORCYBER, MCNOSC, and HQMC C4 initiatives through the continued development of MCEN architectures.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: SEIC: Engineering and Technical Support</p> <p align="right">Articles:</p>	5.844	1.947	1.947	0.000	1.947
<p>FY 2015 Accomplishments:</p> <p>-Continued to provide system engineering policy, process, systems analysis, SE resource management, requirements transition coordination, Systems of Systems Certification, transport engineering analysis,</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>transportation certification and external (DoD, Joint Staff, ASN, Navy, Army et al.) coordination to ensure program success, system interoperability, and an integrated system of systems capabilities for the Marine Corps.</p> <ul style="list-style-type: none"> - Successfully integrated Marine Corps Enterprise Network (MCEN) Services (e.g. cyber-security, email, VOSIP, web, VTC & File share) and MAGTF C2 Systems (e.g. GCSS-MC, JTCW, GCCS-TCO, AFATDS, BFT/FBCB2, Video Scout/CM-2 & MEF IAS FoS) into the Navy's Consolidated Afloat Network Enterprise Services (CANES); Enhancing current and future naval C4ISR integration aboard LHD and LSD class amphibious assault ships. - Initiated Virtual Rapid Prototyping Laboratory (VRPL) event that will produce a repeatable process to conduct distributed systems integration testing in a Live Virtual Testing environment between a full MAGTF C2 architecture and C4ISR infrastructure (at MCTSSA) and a complete, USN afloat network environment (at SSC-PAC and SSC-LANT) to further enhance C2 of maritime and MAGTF forces from the sea-base. - Integrated MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in support of 13th, 15th, 24th, 26th and 31st MEU deployments via DGSIT. - Published the GCSS-MC Full Deployed Capability (FDC) Detailed Report and associated GCSS-MC FDC Executive Report to inform leadership through this highly detailed technical analysis and subsequent presentations and collaboration. Additionally, it served principally to help inform current and future decisions made by the program office, adjacent organizations, and stakeholders within the community of interest. - Established the SIAT Leadership Seminar Series bringing Government/FFRDC/Labs/Public best practices to MCSC employees, contractors and other support personnel. This gained the attention of leadership at the highest levels and as a continuing effort is expected to grow and help our entire workforce make more informed and thus better decisions at all levels. - Continued analysis with the comprehensive detailed maintenance and supply analysis of data derived from the GCSS-MC export in support of the DC I&L Enterprise Ground Equipment Management section and the Marine Corps' submission of cost and logistics data to the Naval Center for Cost Analysis. - Completed initial assessment of various courses of action for the USMC Light Tactical Vehicle Portfolio and the Ground Combat and Tactical Vehicle (GCTV) Strategy developed by CD&I. - Continued to evaluate Counter-Improvised Explosive Device detection capabilities in support of a planned FY16 Analysis of Alternatives. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> Contribute to the development of the 2016 Afloat MAGTF C4 Required Capabilities (AMC4RC) Letter. -Contribute to the OPNAV N9 & N2/N6 Blue-In-Support-Of-Green (BISOG) program. -Provide engineering support to capabilities development, review and assessment as well as requirements transition. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Provide engineering support to the development of USMC input to OUSD AT&L's Joint C2 Capability Area FY17 Sustainment & Modernization Plan and Plan Build Workshop.</p> <ul style="list-style-type: none"> - Finalize and implement Navy/Marine Corps governance, policy, and procedures to establish and update shipboard bandwidth management and prioritization (Quality of Service) within the Navy's Automated Digital Network System (ADNS) to further enhance naval C2 and C2 from the sea-base. - Integrate MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in support of 11th, 15th, 22nd and 24th MEU deployments via DGSIT. (this corrects the MEUs that are impacted) - Synchronize AC2S/CAC2S & TBMCS with C2IS/C2AOS (USAF) and NAOC2 (USN), to ensure continued interoperability with the CJFACC ashore and afloat as TBMCS is phased out. - Ensure continued interoperability of C2PC/JTCW and GCCS-TCO with GCCS-J, GCCS-A and GCCS-M/MTC2 as GCCS-J migrates to a new baseline (x86), through continued participation in Joint C2 Multi-Party Engineering IPTs and working groups. - Continue detailed analysis of the LOG IT Portfolio of systems, subsystems, and applications utilizing the inherent capabilities resident within the LOG IT Portfolio Analysis Team. - Continue assessments of the GCTV portfolio in support of the FY16 GCTV Strategy Update. - Conduct detailed analysis in support of the C-IED Detection Capability Analysis of Alternatives. - Baseline and assess options to address gaps within the Information Exchange Capabilities of the Ground Combat Element Company Leadership. <p><i>FY 2017 Base Plans:</i></p> <ul style="list-style-type: none"> - Provide technical and engineering support to the development of the 2017 Afloat MAGTF C4 Required Capabilities (AMC4RC) Letter. -Contribute to the OPNAV N9 & N2/N6 Blue-In-Support-Of-Green (BISOG) program development. -Provide engineering support to the development of USMC input to OUSD AT&L's Joint C2 Capability Area FY18/19 Sustainment & Modernization Plan and Plan Build Workshop - Integrate MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in support of 11th, 13th, 22nd, 26th and 31st MEU deployments via DGSIT. - Conduct integration testing with PEO C4I & SPAWAR to integrate MCEN Services and MAGTF C2 Systems into the Navy's CANES environment aboard the LPD-17 class amphibious assault ships. - Continue assessments of the GCTV portfolio in support of the FY18 GCTV Strategy Update. - Support follow-on activities to C-IED Detection Capability Analysis of Alternatives including assessments for the development of a Capability Development Document (CDD). 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue to baseline and assess options to address gaps within the Information Exchange Capabilities of the MAGTF.						
FY 2017 OCO Plans: N/A						
Title: Public Affairs System (PAS): Product Development		0.000	0.300	0.091	0.000	0.091
	Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A						
FY 2016 Plans: Initiate support to the research and evaluation of solutions to modernize the Public Affairs Still Acquisition System into a single handheld device with the capability to acquire, edit and transmit still and video imagery and engage publics via traditional and social media. These actions will include the evaluation of device solutions, development of specific software applications, and the attainment of required information assurance certifications and accreditations for a handheld Public Affairs System. This is a new start for RDT&E in FY16.						
FY 2017 Base Plans: Initiate support to the research and evaluation of solutions to modernize the Public Affairs Live Media Engagement System with the capability to transmit imagery and engage publics via traditional and social media. These actions will include the evaluation of device solutions, development of specific software applications, and the attainment of required information assurance certifications and accreditations for Public Affairs transmission capabilities.						
FY 2017 OCO Plans: N/A						
Title: MARCIMS: Marine Civil Information Management System		0.046	0.200	0.066	0.000	0.066
	Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continued software development to incorporate all remaining threshold requirements to get to Full Operational Capability (FOC).						
FY 2016 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue development and implementation of minor software patches. FY 2017 Base Plans: Continue development and implementation of minor software patches. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	11.946	5.085	4.861	0.000	4.861

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/4620AA: <i>MARCIMS</i>	0.562	0.301	0.297	-	0.297	0.235	0.221	0.225	0.230	Continuing	Continuing
• PMC/4620BB: <i>Public Affairs Systems</i>	1.181	1.124	0.893	-	0.893	0.911	0.665	0.677	0.691	Continuing	Continuing

Remarks

D. Acquisition Strategy
 Marine Civil Information Management System (MARCIMS) will employ an evolutionary acquisition strategy utilizing an incremental approach for development and fielding of the MARCIM. The Letter of Clarification (LOC) identifies two baselines to fulfill all Threshold requirements. The current acquisition strategy addresses both baseline builds to include the software development, training, fielding and sustainment of these builds. Build 1 will support an Initial Operational Capability (IOC) and Build 2 will support a Full Operational Capability (FOC).

 Public Affairs System will maximize the utilization of commercial-off-the-shelf devices and software to provide best overall performance solutions to the warfighter with minimal developmental cost and schedule investments.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2277 / System Engineering and Integration
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MARCIMS	C/FFP	AGC : Boston, MA	1.080	0.000		0.174	Apr 2016	0.000		-		0.000	0.000	1.254	-
MARCIMS	MIPR	AGC : Boston, MA	0.086	0.000		0.026	Feb 2016	0.000		-		0.000	0.000	0.112	-
Prior Years Cumulative Funding	Various	Various : Various	0.118	0.000		0.000		0.000		-		0.000	0.000	0.118	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Various	5.316	1.208	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Experimental Forward Operating Base (E2O)	C/FFP	ARDC : Wash, DC	1.005	0.100	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PAS	WR	TBD : TBD	0.000	0.000		0.300	Mar 2016	0.091	Mar 2017	-		0.091	Continuing	Continuing	Continuing
Experimental Forward Operating Base (E2O)	MIPR	CERL ARMY : IL	0.000	0.350	Mar 2015	0.000		0.000		-		0.000	0.000	0.350	-
JINTACCS	C/FFP	NSWC : Dahlgren, VA	0.000	0.723	Jul 2015	0.000		0.000		-		0.000	0.000	0.723	-
Subtotal			7.605	2.381		0.500		0.091		-		0.091	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MARCIMS	WR	SPAWAR : Charleston, SC	0.007	0.046	Feb 2015	0.000		0.066	Feb 2017	-		0.066	0.000	0.119	-
Prior Years Cumulative	C/BA	CDSA : DAM Neck	0.540	0.000		0.000		0.000		-		0.000	0.000	0.540	-
MAGTF SEI&C	C/FP	SPAWAR : Charleston, SC	0.500	0.355	Apr 2015	0.500	Apr 2016	0.700	Oct 2016	-		0.700	Continuing	Continuing	Continuing
MAGTF SEI&C	C/FFP	NSWC : Indian Head, MD	0.000	0.355	Feb 2015	0.000		0.250	Jan 2017	-		0.250	0.000	0.605	-
MAGTF SEI&C	C/FFP	NSWC : NDSA Dam Neck	0.000	0.320	Feb 2015	0.000		0.250	Nov 2016	-		0.250	0.000	0.570	-
MAGTF SEI&C	C/FFP	AMSEL : Aberdeen, MD	0.000	0.802	Apr 2015	0.000		0.000		-		0.000	0.000	0.802	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206313M / Marine Corps Comms Systems				2277 / System Engineering and Integration							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF SEI&C	C/BA	AFCMC : Hanscom, AFB	0.000	1.330	Feb 2015	0.000		0.000		-		0.000	0.000	1.330	-
MAGTF SEI&C	C/BA	NSWC : Carderock	0.000	0.035	Feb 2015	0.000		0.000		-		0.000	0.000	0.035	-
Experimental Forward Operating Base (E2O)	MIPR	Various : Various	0.000	0.146	Mar 2015	0.000		0.000		-		0.000	0.000	0.146	-
JINTACCS	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.821	Apr 2015	0.000		0.000		-		0.000	0.000	0.821	-
JINTACCS	WR	NSWC : Dahlgren, VA	0.000	1.150	Jul 2015	0.000		0.000		-		0.000	0.000	1.150	-
JINTACCS	MIPR	AMSEL : Aberdeen, MD	0.000	0.218	Jul 2015	0.000		0.000		-		0.000	0.000	0.218	-
JINTACCS-2	WR	NSWC : Dahlgren, VA	0.000	0.507	Nov 2015	0.000		0.000		-		0.000	0.000	0.507	-
JINTACCS	C/FFP	ARMY : TBD	0.000	0.000		0.325	Apr 2016	0.498	Apr 2017	-		0.498	0.000	0.823	-
MAGTF SEI&C	WR	NSWC : Panama City	0.000	0.583	May 2015	0.000		0.000		-		0.000	0.000	0.583	-
MAGTF SEI&C	C/BA	AFCMC : Hanscom, AFB	0.000	0.559	Oct 2015	0.000		0.000		-		0.000	0.000	0.559	-
MAGTF SEI&C	C/FP	LTC : Stafford, VA	8.573	0.593	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MAGTF SEI&C	WR	NSWC : Dahlgren, VA	3.923	0.734	Apr 2015	1.447	Apr 2016	0.747	Mar 2017	-		0.747	Continuing	Continuing	Continuing
Subtotal			13.543	8.554		2.272		2.511		-		2.511	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cummulative Funding	Various	Various : Various	5.622	0.000		0.000		0.000		-		0.000	0.000	5.622	-
Experimental Forward Operating Base (E2O)	WR	MCWL : Quantico, VA	1.791	0.000		0.125	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2277 / System Engineering and Integration
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Experimental Forward Operating Base (E2O)	WR	ATC : Aberdeen, MD	1.210	0.070	Jul 2015	0.140	May 2016	0.100	Nov 2016	-		0.100	0.000	1.520	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Carderock	0.283	0.000		0.550	Nov 2015	0.484	Nov 2016	-		0.484	0.000	1.317	-
Experimental Forward Operating Base (E2O)	WR	NAVFAC : Various	0.000	0.000		0.100	Mar 2016	0.100	Nov 2016	-		0.100	0.000	0.200	-
Experimental Forward Operating Base (E2O)	WR	SPAWAR : SSC PAC	0.000	0.597	Aug 2015	1.298	Mar 2016	1.475	Nov 2016	-		1.475	0.000	3.370	-
Subtotal			8.906	0.667		2.213		2.159		-		2.159	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JINTACCS Support	WR	Travel : MCSC, Quantico, VA	0.000	0.166	Sep 2015	0.100	Sep 2016	0.100	Sep 2017	-		0.100	0.000	0.366	-
MAGTF SEI&C	C/BA	Not Specified : Not Specified	0.000	0.178	Sep 2015	0.000		0.000		-		0.000	0.000	0.178	-
Subtotal			0.000	0.344		0.100		0.100		-		0.100	0.000	0.544	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	30.054	11.946	5.085	4.861	-	4.861	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2277 / System Engineering and Integration
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Proj 2277	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	MARCIMS IOC ▲				MARCIMS FOC ▲				MARCIMS SW Updates																			
	PAS Modernization																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2277 / <i>System Engineering and Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2277				
MARCIMS IOC	1	2015	1	2015
MARCIMS FOC	4	2015	4	2015
MARCIMS SW Updates	1	2016	4	2018
PAS Modernization	1	2016	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>				Project (Number/Name) 2278 / <i>Air Defense Weapons System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2278: <i>Air Defense Weapons System</i>	41.281	3.453	1.721	2.795	-	2.795	1.807	2.880	2.925	2.992	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Ground Based Air Defense-Transformation (GBAD-T) - Based upon the deployment of the Low Altitude Air Defense (LAAD) Battalions and their employment of the Stinger Missile, GBAD-T transforms Air Defense equipment through technology insertion and equipment repackaging to address capability gaps as the result of equipment obsolescence and the emergent and evolving threats to the Marine Air Ground Task Force (MAGTF).

GBAD-T consists of four efforts: 1) systems engineering support of currently fielded LAAD equipment/assets to include the Stinger Mounted Optic and Mode 5/S Identification Friend or Foe (IFF); 2) redesign and integration of the Advanced Man-Portable Air Defense System (A-MANPADS) Increment 1 Fire Unit Vehicle (FUV) which consists of a M1114 (HMMWV), into an operationally capable vehicle configuration; 3) design, test, and integration of new systems for the Fire Unit Vehicle (FUV) to replace aging and failing technology. The replacement technology is required to retain interfaces with, and be capable of receiving, a Common Aviation Command and Control System (CAC2S) broadcasted link. It will also be capable of interfacing with legacy Marine Air Command and Control System (MACCS) equipment; 4) Redesign and re-integration of Section Leader Vehicle (SLV) equipment from the shelter on a M1165 configuration to M1114 configuration, providing a common platform with greater mobility, force protection and maneuverability increasing overall operational capability.

GBAD Future Weapons System (GBAD-FWS) is a new development effort consisting of a kinetic and non-kinetic capability to defeat the full spectrum of Low-Altitude Low Observable/Low Radar Cross Section threats. The increase of \$1.074M from FY16 to FY17 reflects initiation of the GBAD Future Weapons System acquisition, engineering, and assessment efforts to determine the technology solutions required to defeat the full spectrum or threats associated with the Marine Corps Low-Altitude Air Defense mission. Efforts will include assessment of transitioning ONR Future Naval Capability direct energy efforts to a Marine Corps Program of Record.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: GBAD TRANSFORMATION: Product Development	1.610	0.827	1.016	0.000	1.016
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Completed M1114 (HMMWV)/Fire Unit Vehicle (FUV) design effort.					
FY 2016 Plans: Initiate Stinger Missile Mounted Optic (AN/PAS-18) replacement development.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2278 / <i>Air Defense Weapons System</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Initiate Section Leader Vehicle redesign and re-integration of Section Leader Vehicle equipment from the shelter on a M1165 configuration to M1114 configuration.</p> <p>-Continue Stinger Missile Mounted Optic (AN/PAS-18) replacement development.</p> <p>FY 2017 OCO Plans: N/A</p>						
<p>Title: GBAD TRANSFORMATION: Support Costs</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Supported M1114 (HMMWV)/Fire Unit Vehicle (FUV) Replacement documentation.</p> <p>FY 2016 Plans: -Continue development of both Stinger Missile Mounted Optic (AN/PAS-18) replacement and M1114 (HMMWV)/FUV Replacement documentation. -Initiate an A-MANPADS Engineering Change Proposal (ECP) Readiness Analysis.</p> <p>FY 2017 Base Plans: -Continue A-MANPADS Engineering Change Proposal (ECP) Readiness Analysis.</p> <p>FY 2017 OCO Plans: N/A</p>		0.499	0.403	0.364	0.000	0.364
		-	-	-	-	-
<p>Title: GBAD TRANSFORMATION: Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Completed M1114 (HMMWV)/Fire Unit Vehicle (FUV) test activities and Warhead Proximity Fuse testing.</p> <p>FY 2016 Plans: -Initiate support of Stinger Missile Mounted Optic (AN/PAS-18) replacement Developmental Test.</p> <p>FY 2017 Base Plans: -Initiate support of Stinger Missile Mounted Optic (AN/PAS-18) replacement Developmental Test and preparations for Operational Test/Field User Evaluation (OT/FUE).</p> <p>FY 2017 OCO Plans:</p>		1.065	0.250	0.175	0.000	0.175
		-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2278 / <i>Air Defense Weapons System</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: GBAD TRANSFORMATION: Program Management Support Articles: FY 2015 Accomplishments: -Initiated development of GBAD Future Weapons System acquisition documentation in support of Stinger Night Replacement and R&D efforts to test and integrate a Fire Unit Laptop and Secure Tactical Wireless replacement system. FY 2016 Plans: -Continue with Stinger Night Replacement acquisition documentation. -Initiate development of acquisition documentation in support of Stinger Identification Friend or Foe (IFF) replacement system. FY 2017 Base Plans: -Complete Stinger Night Replacement acquisition documentation. FY 2017 OCO Plans: N/A	0.279	0.241	0.240	0.000	0.240
	-	-	-	-	-
Title: GBAD FUTURE WEAPONS SYSTEM: Program Management Support Articles: FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: -Initiate GBAD Future Weapons System acquisition documentation and assessment efforts to determine the technology solutions required to defeat the full spectrum or threats associated with the Marine Corps Low-Altitude Air Defense mission. FY 2017 OCO Plans: N/A	0.000	0.000	1.000	0.000	1.000
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	3.453	1.721	2.795	0.000	2.795

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2278 / <i>Air Defense Weapons System</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PMC/3006: <i>GBAD-T</i>	30.036	6.642	9.170	-	9.170	9.437	12.235	12.490	12.731	Continuing	Continuing

Remarks

D. Acquisition Strategy

GBAD-Transformation: A-MANPADS Increment I is an Abbreviated Acquisition Program (AAP), GBAD-T enables the rapid transition from the Avenger/MANPADS weapon system to the more mobile, flexible and maintainable Advanced MANPADS. The AAP is principally comprised of integrating Government Off The Shelf (GOTS) equipment and Non-Developmental Items (NDI).

GBAD Future Weapons System is a technology transition assessment of an ONR Future Naval Capability Directed Energy effort.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems					Project (Number/Name) 2278 / Air Defense Weapons System				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD-T	WR	NSWC : Dahlgren, VA	0.247	0.220	Jan 2015	0.230	Feb 2016	0.110	Dec 2016	-		0.110	Continuing	Continuing	Continuing
GBAD-T	WR	NSWC : Crane.IN	3.920	0.670	Nov 2014	0.000		0.411	Dec 2016	-		0.411	Continuing	Continuing	Continuing
GBAD-T	Various	VARIOUS : VARIOUS	5.548	0.720	Mar 2015	0.597	Jul 2016	0.495	Jul 2017	-		0.495	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	N/A : N/A	15.932	0.000		0.000		0.000		-		0.000	0.000	15.932	-
Subtotal			25.647	1.610		0.827		1.016		-		1.016	-	-	-

Remarks

* Base FY 2016 / FY 2017 Award date for Various Activities reflect the actual obligation date for the last activity.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD-T	MIPR	Army : AMRDEC	0.049	0.060	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GBAD-T	WR	NSWC : Crane, IN	1.802	0.439	Nov 2014	0.403	Nov 2015	0.364	Dec 2016	-		0.364	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	N/A : N/A	4.279	0.000		0.000		0.000		-		0.000	0.000	4.279	-
Subtotal			6.130	0.499		0.403		0.364		-		0.364	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD-T	MIPR	NSWC Crane : Crane, IN	0.000	0.940	Apr 2015	0.250	Jan 2016	0.175	Mar 2017	-		0.175	Continuing	Continuing	Continuing
GBAD-T	MIPR	CMDS : Redstone Arsenal,AL	0.600	0.125	Nov 2014	0.000		0.000		-		0.000	0.000	0.725	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2278 / Air Defense Weapons System
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years Cumulative Funding	Various	N/A : N/A	4.269	0.000		0.000		0.000		-		0.000	0.000	4.269	-
Subtotal			4.869	1.065		0.250		0.175		-		0.175	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GBAD-FWS	WR	NSWC : Dahlgren, VA	0.000	0.000		0.000		1.000	Dec 2016	-		1.000	0.000	1.000	-
GBAD-T	C/FP	MCSC : Quantico, VA	2.936	0.029	Jul 2015	0.000		0.090	Jul 2017	-		0.090	Continuing	Continuing	Continuing
GBAD-T	Various	MCSC Travel : Quantico, VA	0.067	0.055	Sep 2015	0.076	Sep 2016	0.060	Sep 2017	-		0.060	Continuing	Continuing	Continuing
GBAD-T	WR	NSWC : Dahlgren, VA	0.314	0.195	Jan 2015	0.165	Oct 2015	0.090	Jan 2017	-		0.090	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	N/A : N/A	1.318	0.000		0.000		0.000		-		0.000	0.000	1.318	-
Subtotal			4.635	0.279		0.241		1.240		-		1.240	-	-	-

Remarks
* Base FY 2017 Award date for NSWC Dahlgren reflects start of incremental funding in support of GBAD Future Weapons System.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	41.281	3.453	1.721	2.795	-	2.795	-	-	-

Remarks

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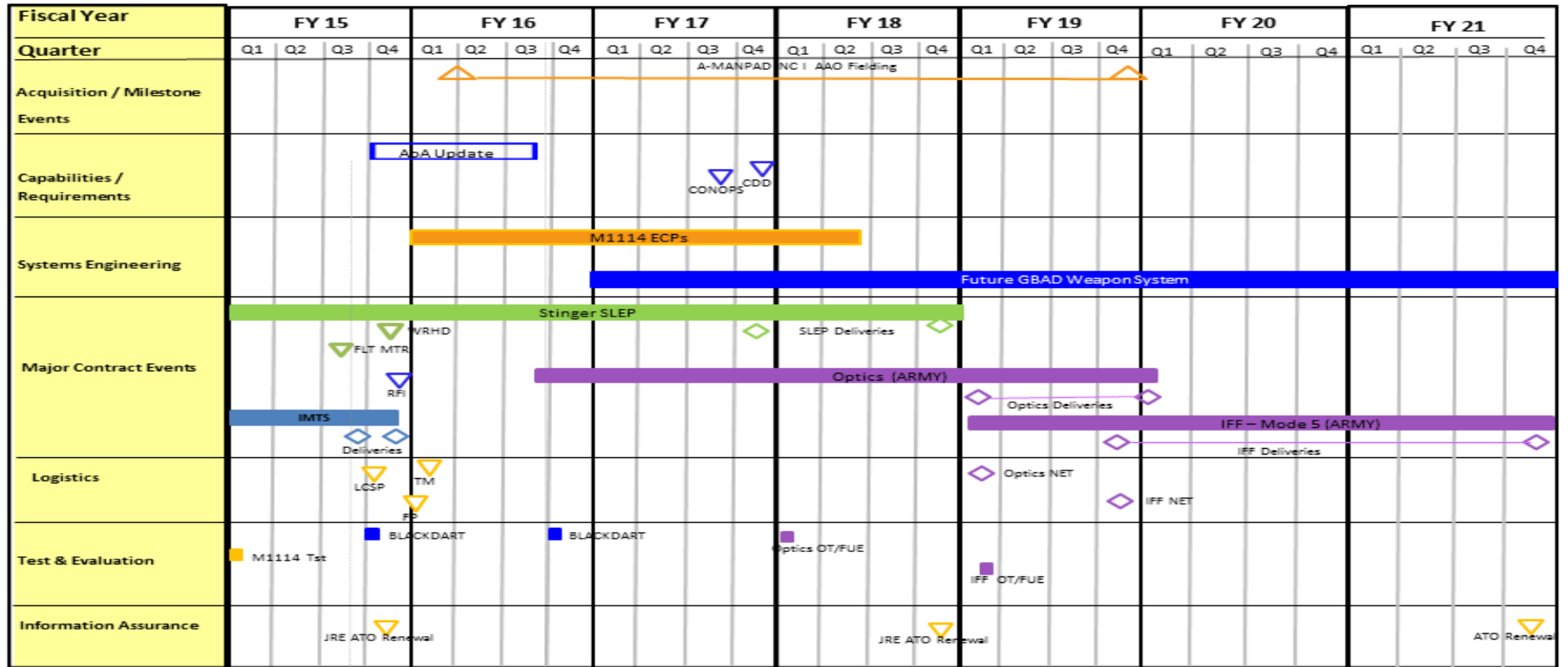
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2278 / Air Defense Weapons System



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2278 / <i>Air Defense Weapons System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2278				
MC--IMPROVED MOVING TARGET SIMULATOR DELIVERY	3	2015	4	2015
STINGER SLEP CONTRACT AWARD (Flight Motor)	3	2015	3	2015
STINGER SLEP CONTRACT AWARD (War Head)	4	2015	4	2015
STINGER SLEP DELIVERY	4	2017	4	2018
JRE (JOINT RANGE EXTENSION) FY15 AUTHORITY TO OPERATE RENEWAL	4	2015	4	2015
AMANDPADS INC 1 FIELDING	2	2016	4	2019
JRE FY18 AUTHORITY TO OPERATE RENEWAL	4	2018	4	2018
OPTICS OT/FUE (OPERATIONAL TEST/FIELD USER EVALUATION)	1	2018	1	2018
OPTICS DELIVERY	1	2019	1	2020
IFF OT/FUE	1	2019	1	2019
IFF DELIVERIES	4	2019	4	2021
M1114 (HMMWV)/FUV TEST	1	2015	1	2015
M1114 (HMMWV)/FUV ECP (ENGINEERING CHANGE PROPOSAL)	1	2016	2	2018
BLACK DART 1	4	2015	4	2015
BLACK DART 2	4	2016	4	2016
GBAD FUTURE WEAPONS SYSTEM	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2510: <i>MAGTF CSSE & SE</i>	274.353	7.128	2.998	2.345	-	2.345	1.216	0.934	0.963	0.984	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

ELECTRONIC MAINTENANCE SUPPORT SYSTEM (EMSS): Re-named MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2) beginning in FY16.
 TRANSPORTATION SYSTEMS PORTFOLIO (TSP): Re-named Enterprise Logistics Support Systems (ELSS) beginning in FY16.
 GCSS-MC Tactical-Warehouse Management System (T-WMS) will transition to PE 0219902M Project C5503 commencing in FY2017.

A. Mission Description and Budget Item Justification

(U) The Marine Air Ground Task Force (MAGTF) Combat Service Support Element & Supporting Establishment (CSSE & SE) consists of mutually supporting Logistics Information Technology (IT) programs that support force deployment, planning, and execution; sustainment and distribution; and contributes to the Combatant Commander's Common Operating Picture to support rapid accurate decision making. The funding decrease of \$0.659M from FY16 to FY17 is primarily due to the completion of initial developmental efforts in accordance with program development schedule for the Transportation Systems Portfolio.

GLOBAL COMBAT SUPPORT SYSTEM-MARINE CORPS (GCSS-MC) is the physical implementation of the enterprise Information Technology (IT) architecture designed to support both improved and enhanced Marine Air Ground Task Force (MAGTF) Combat Support Services (CSS) functions and MAGTF Commander and Combatant Commanders/Joint Task Force (CC/JTF) combat support information requirements. Today, the program includes all transactional CSS systems related to Supply Chain Management (SCM) and Enterprise Asset Management (EAM) functionality enabled with Service Management functions. When combined, these capabilities are referred to as Logistics Chain Management(LCM). The primary goal of GCSS-MC/LCM is to provide the capabilities specified in the Logistics Operational Architecture (Log OA). The result of enabling the Log OA is the retirement of logistics applications. The GCSS-MC/LCM exposes timely mission information to Marine Corps operational and CSS commanders, CC/JTF commanders and their staffs and other authorized users. It exposes information interoperability and common logistics information applications and services across functional areas. GCSS-MC/LCM allows operating forces commanders to base decisions on complete logistics information and make decisions in concert with specific operational tasks. Other follow-on capabilities can be invoked if affordable and when defined by the Business Case(s). Funding for the Tactical-Warehouse Management System (T-WMS) in GCSS-MC, RDTE PE 0206313M, project 2510 will transition to PE 0219902M Project C5503 commencing in FY2017.

JOINT FORCE REQUIREMENTS GENERATOR II (JFRG II) is an Automated Information System (AIS) that provides the Marine Corps' the capability to plan and execute strategic force deployments in support of Joint contingency and crisis action operations and plans. It serves as the single link between Service operational force requirements and validated/sourced unit personnel and cargo data. JFRG II permits multi-level planning with entry of equipment and personnel data, transportation/movement data, and the phasing of the total force throughout the entire movement timeline. JFRG II interfaces with the Joint Operation Planning and Execution System (JOPES) to register update and validate Time Phased Force and Deployment Data (TPFDD) within the Department of Defense chain of command. Validated deployment information is then used by U.S. Transportation Command for the scheduling of strategic transportation assets. JFRG II interfaces with the MAGTF Deployment Support

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>
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System II (MDSS II) for unit cargo information and the War Reserve System (WRS) in order to register sustainment requirements. JFRG II can generate standard, executive, and ad hoc reports and perform database queries to support information requirements. JFRG II operates and functions in a classified environment.

BASE TELECOMMUNICATIONS INFRASTRUCTURE (BTI) provides all Marine Corps installations with the base area network communications infrastructure that connects the end-user to the Defense Information Systems Agency (DISA) network. BTI sustains upgrades and enhances the telecommunications systems infrastructure for all Marine Corps Installations in order to meet the demands required to support the 5th Element of the Marine Air Ground Task Force (MAGTF). BTI is designed to maintain industry currency as it relates to technological capabilities for all voice, video and data transport services via each installation's infrastructure. These data services include support for, but are not limited to: telephony (including voice over internet protocol), video-teleconferencing, integrated services digital network, Marine Corps enterprise network, energy monitoring control systems, intrusion detection systems, access control systems, fire alarm control networks and fleet training systems. This includes supporting systems such as optical networks, telecommunications management systems, primary power, voice mail, teleconferencing, and outside plant infrastructure.

TRANSPORTATION SYSTEMS PORTFOLIO (TSP): Provides funding that support the USMC Deployment and Execution Support Systems and the Distribution Management Support Systems, and fair share cost to the joint program management office systems. These systems and applications support the planning, deployment, distribution, sustainment and redeployment of supplies, equipment and personnel. The TSP portfolio applications utilize AIT read/write devices, active radio frequency identification (aRFID) tags and satellite tracking systems. TSP applications support In-Transit Visibility (ITV) and Total Asset Visibility (TAV) initiatives to provide commanders with timely and accurate near real-time data on the location and movement of personnel, equipment and supplies that are in-process, in-transit and in-theater. Portfolio renamed Enterprise Logistics Support Systems beginning in FY16.

MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2): FY15 and prior program funding named ELECTRONIC MAINTENANCE SUPPORT SYSTEM (EMSS). MLS2 is composed of several main components including Electronic Maintenance Devices (EMD) and charger racks. It is a rugged organizational-level (O-level), light-weight, one-man portable maintenance device capable of supporting multiple platforms and systems across maintenance communities. It provides a Commercial Off-The-Shelf (COTS) hardware device equipped with Built-In-Test/Built-In-Test Equipment (BIT/BITE) interfaces, and Software Defined Test Instrument (SDTI) General Purpose Electronic Test Equipment (GPETE) capabilities. These hardware capabilities will enable commercial or custom DoD and USMC software capabilities including Interactive Electronic Technical Manuals (IETMs), Computer Based Training (CBT), and other maintenance applications to be hosted on EMD platforms. With these capabilities, maintainers will make more informed decisions, thereby sustaining force readiness over time.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: GLOBAL COMBAT SUPPORT SYSTEM - MC (GCSS-MC)	3.351	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Continued development of the GCSS-MC/LCM Increment 1 baseline upgrade from Oracle eBusiness Suite Release 11i to Release 12.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Title: JOINT FORCES REQUIREMENT GENERATION II (JFRG II) Articles:	0.755 -	0.204 -	0.202 -	0.000 -	0.202 -
FY 2015 Accomplishments: Continued initiation of development of the modernized information system.					
FY 2016 Plans: Continue to conduct Development, Government Acceptance, Information Security and Interoperability testing/certification Deploy Information System and be prepared to transition to Post Deployment Software Support (PDSS).					
FY 2017 Base Plans: Initiate PDSS and the support of Engineering Change Proposals (ECPs).					
FY 2017 OCO Plans: N/A					
Title: BASE TELECOM (BTI) Articles:	0.450 -	0.490 -	0.490 -	0.000 -	0.490 -
FY 2015 Accomplishments: Continued test and evaluation (T&E) engineering support for Defense Information Systems Agency (DISA) Unified Capabilities (UC) (voice, video, collaboration, and data) implementation.					
FY 2016 Plans: Continue test and evaluation (T&E) engineering support for Defense Information Systems Agency (DISA) Unified Capabilities (UC) (voice, video, collaboration, and data) implementation.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue test and evaluation (T&E) engineering support for Defense Information Systems Agency (DISA) Unified Capabilities (UC) (voice, video, collaboration, and data) implementation. FY 2017 OCO Plans: N/A					
Title: TRANSPORTATION SYSTEMS PORTFOLIO (TSP) / Enterprise Logistics Support Systems Articles:	2.572 -	1.662 -	1.112 -	0.000 -	1.112 -
FY 2015 Accomplishments: Continued Integrated Computerized Deployment System (ICODES) Sea Service Deployment Module (SSDM) with JPMO. Continued to validate and verify program development and continue testing and validation of functional transition. FY 2016 Plans: Initiate subsequent increment of ICODES SSDM development as necessary and continue functional testing and validation. FY 2017 Base Plans: Initiate third increment of SSDM for Maritime Repositioning Force (MPF) operations. FY 2017 OCO Plans: N/A					
Title: MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2) Articles:	0.000 -	0.642 -	0.541 -	0.000 -	0.541 -
FY 2015 Accomplishments: N/A FY 2016 Plans: -Initiate investigation of software defined test instruments (SDTI) and software applications. -Initiate investigation of advanced Interactive Electronic Technical Manual software to incorporate advanced diagnostics. -Continue information security and interoperability testing/certification.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Initiate software applications which support enhanced maintenance capabilities on existing weapon system platforms. FY 2017 Base Plans: -Continue to investigate software defined test instruments (SDTI) and software applications. -Continue to investigate advanced Interactive Electronic Technical Manual software to incorporate advanced diagnostics. -Continue information security and interoperability testing/certification. -Continue software applications which support enhanced maintenance capabilities on existing weapon system platforms. -Evaluate downsized testers for tablet applications. -Investigate instrument modules for on system testing. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	7.128	2.998	2.345	0.000	2.345

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/BLI 463500 BTI: <i>BTI</i>	5.064	54.476	22.964	-	22.964	35.902	82.713	168.238	47.907	Continuing	Continuing
• PMC/BLI 418100: <i>MAGTF Logistics Support Systems</i>	0.000	3.606	3.829	-	3.829	3.919	3.022	3.083	3.145	Continuing	Continuing
• PMC/BLI 461700: <i>TSP/Enterprise Logistics Support Systems</i>	0.595	0.396	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/BLI 462000: <i>TSP/Enterprise Logistics Support Systems</i>	0.000	0.000	0.594	-	0.594	0.000	0.000	0.000	0.000	0.000	0.594

Remarks

D. Acquisition Strategy
GLOBAL COMBAT SUPPORT SYSTEM-MARINE CORPS (GCSS-MC) The Acquisition Strategy for GCSS-MC/LCM Increment 1 and the Business Capabilities Lifecycle for the GCSS-MC/LCM Follow-on acquisition is building an acquisition approach in the portfolio of systems for Logistics Chain Management (LCM) that adds to the baseline system developed in Increment 1. The goal is to field operationally suitable and supportable capabilities in the shortest time possible that meets the

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>
<p>Logistics Advocate goals. The GCSS-MC Program Management Office acquisition approach will deliver capabilities in increments as defined in the DoDi 5000 Interim guidance, and updated as guidance is developed. Each increment capability will follow the established acquisition model for software intensive systems. Increments will include emergent user priorities, advanced technology improvements and expanded capabilities as prioritized and funded by the system advocates. Increment 1 is an operational Enterprise system (authorized for 36,000 users). The Mobile Field Service (MFS), Enterprise Automated Task Organization (EATO) and Riverbed Steelhead Appliance (RSA) (WAN optimization) will be provided as a deliverable in Increment 1 Release 1.1.1. This release provides limited detached capability (store and forward), automated task organizing, and optimizes WAN throughput. Other follow-on capabilities can be invoked if affordable and when defined by the Business Case(s).</p> <p>JOINT FORCES REQUIREMENT GENERATOR II (JFRG II) is required to modernize in order to implement Joint Requirements Oversight Counsel (JROC) mandates in support of Adaptive Planning and Execution (APEX) including the inclusion of Global Force Management - Data Initiative (GFM-DI) data elements and Joint Command and Control (JC2) Capabilities Development Document (CDD) requirements. The JFRG II legacy software application will remain supported until end of life (EOL) in FY17 when it will be replaced by the modernized version. Future capability improvements as identified in the JC2 CDD will be implemented through the CM process.</p> <p>BASE TELECOMMUNICATIONS INFRASTRUCTURE (BTI) provides all Marine Corps installations with the base area network communications infrastructure that connects the end-user to the DISA network. BTI sustains upgrades and enhances the telecommunications systems infrastructure for all Marine Corps Installations in order to meet the demands required to support the 5th Element of the Marine Air Ground Task Force (MAGTF). Participation in the DISA Unified Capabilities (voice, video, collaboration, and data) pilot is critical to BTI modernization strategy. The RDT&E funds will be utilized for analysis, research and evaluation of Unified Capabilities (UC) (voice, video, collaboration, and data) implementation efforts.</p> <p>TRANSPORTATION SYSTEMS PORTFOLIO (TSP): The acquisition strategy is to develop the functional elements of the MAGTF Deployment Support System II (MDSS II) into a Sea Service Deployment Module (SSDM) of the Integrated Computerized Deployment System (ICODES). ICODES is a Joint Program currently managed by the Surface Deployment and Distribution Command (SDDC) of USTRANSCOM. The development of the SSDM will be instituted as a CLIN to the SDDC JPMO contract for ICODES expected to be awarded in August 2015. The development will follow an evolutionary acquisition approach that allows for continued development based on functional transition and changing user need requirements as well as information assurance requirements. The JPMO will determine the contracting strategy and this PMO will acknowledge and approve strategies prior to funding development.</p> <p>MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2) is pursuing an evolutionary acquisition strategy in order to sustain operationally suitable and supportable capability across the Marine Corps as a maintenance aid. Electronic Maintenance Devices must evolve in concert with the supported platforms maintenance philosophy to provide extended functionality and access to network connectivity.</p> <p>E. Performance Metrics N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 2510 / MAGTF CSSE & SE
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMSS/MAGTF Logistics Support Systems	MIPR	Various : Various	0.000	0.000		0.346	Jan 2016	0.294	Mar 2017	-		0.294	0.000	0.640	-
Prior Years Cumulative Funding	Various	Various : Various	261.019	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
JFRG II	C/FFP	TBD : TBD	0.418	0.565	Sep 2015	0.204	Aug 2016	0.202	Sep 2017	-		0.202	Continuing	Continuing	Continuing
TSP Enterprise Sys Modernization	C/CPFF	USTRANSCOM JPMO : SCOTT AFB, IL	0.000	2.572	Dec 2015	1.662	Jun 2016	1.112	Dec 2016	-		1.112	Continuing	Continuing	Continuing
GCSS-MC/LCM1 - Development	C/FFP	Various : SSC-LANT, SC	4.090	3.351	Sep 2015	0.000		0.000		-		0.000	0.000	7.441	-
Subtotal			265.527	6.488		2.212		1.608		-		1.608	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GCSS-MC/LCM1 - Support	MIPR	MITRE : CECOM, MD	0.940	0.000		0.000		0.000		-		0.000	0.000	0.940	-
EMSS/MAGTF Logistics Support Systems Program SW Support	C/FFP	Various : Various	0.563	0.000		0.296	Mar 2016	0.247	Mar 2017	-		0.247	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	3.177	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			4.680	0.000		0.296		0.247		-		0.247	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JFRG	Various	Various : Various	0.000	0.190	Sep 2016	0.000		0.000		-		0.000	0.000	0.190	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

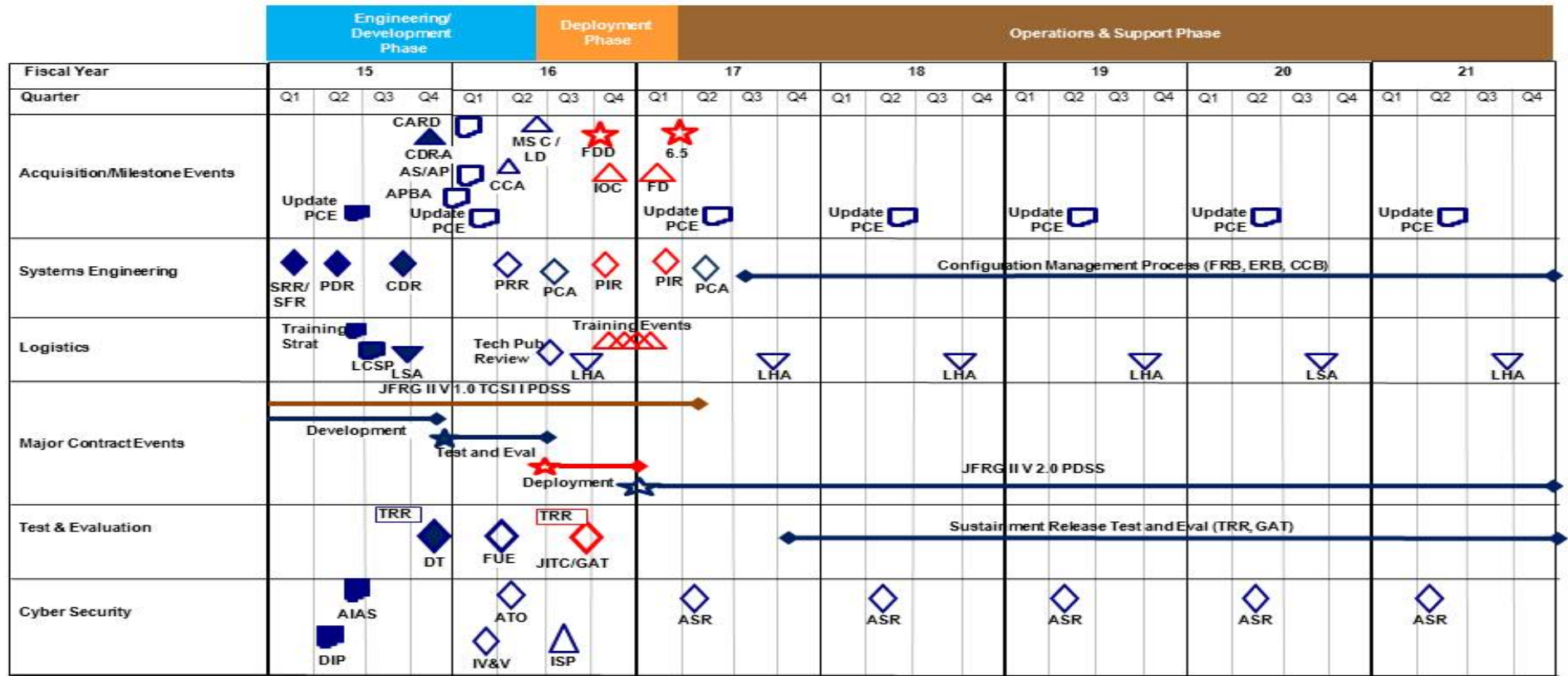
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2510 / MAGTF CSSE & SE

JFRG II Schedule Graphic



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2510 / MAGTF CSSE & SE

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BTI Program Schedule

As of 24 November 2015

Fiscal Year	Production & Deployment																															
	FY16				FY17				FY18				FY19				FY20				FY21				FY22				FY23			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Acquisition/Milestone Events	[FOC]																[FOC]				[FOC]				[FOC]				[FOC]			
Supporting PoPS Gate Template	6.4				6.4				6.4				6.4				6.4				6.4				6.4							
Capabilities/Requirements	APB, MDU, MCICOM/ERS				APB				APB				APB, Re-new, MQU, MCICOM/ERS				APB				APB, Re-new, MQU, MCICOM/ERS				APB							
Systems Engineering	Update SEP																Update SEP				Update SEP				Update SEP				Update SEP			
Logistics	Systems Engineering Technical Reviews (SETR) Applied to all BTI Projects (i.e., PDR, CDR, PCA & PRR)																															
Major Contract Events (Award)	French Creek (ADN), MCAS Cherry Point, Camp Lejeune (Phase 2), MCM/WTC Bridgeport (Voice), MCAS New River (ADN), Camp Lejeune (Phase 1), MCAS Beaufort, MCLB Blount Island, FRF Iwauni (Atagard), MCEITS Kansas City-Voice, MCB Camp Pendleton (P1132), MCB Camp Pendleton-Voice (Phase 1), FRF MC 25 (Base Comm), MCB Quantico (Phase 1), FRF MC 25 (MEB CE), MCB Quantico (Phase 2), FRF ATC (1569), Breckenridge (ADN)																															
Test & Evaluation	Update TEMP																Test Readiness Review (TRR) and System Acceptance Testing (SAT) Applied to all BTI Projects															
Cost	UPDATE CARD, UPDATE LCCCE																PROJECT SYSTEM ACCEPTANCE TESTS															
IA	Type Accreditation: BTI-T: Optical Transport (DWDWM), BTI-S: Voice Switch (UC)																BTI SITE ACCREDITATIONS/SATs															

- Legend
- ▲ Milestone / Key Acquisition Event
 - ▼ Assessments, Proposal Documentation
 - ☆ Contract Awards
 - ★ DPRI
 - 6.4 PoPS Review
 - ▲ * FOC extended to 2029
 - ★ New Construction

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
2510 / MAGTF CSSE & SE



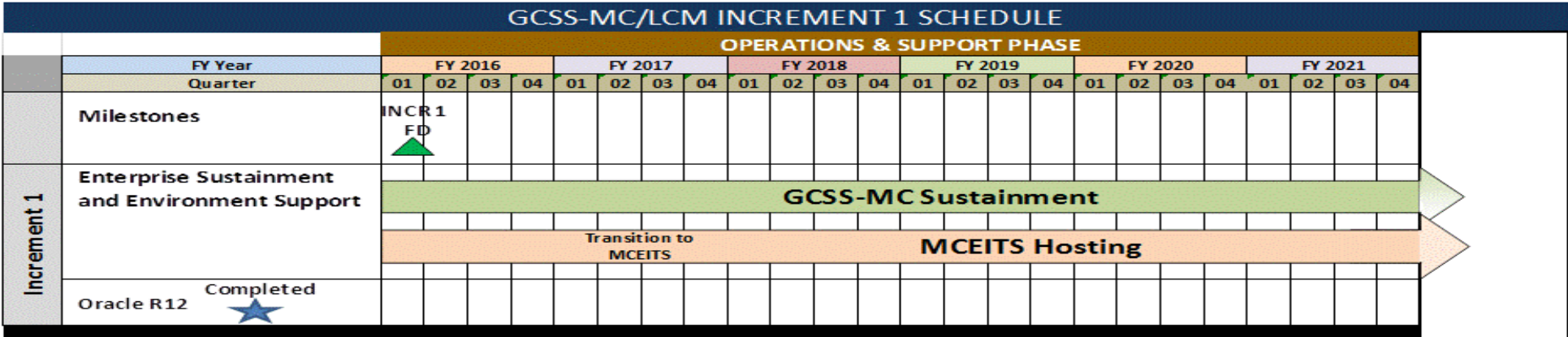
EMSS Schedule (Block I)

		Operations & Support																											
		FY15				FY16				FY17				FY18				FY19				FY20				FY21			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Acquisition/Milestone Events						BLK II FY18 POM																							
Supporting PoPS Gate Template		BLK I				BLK I																							
Capabilities/Requirements																													
Systems Engineering		Tech Refresh/Software Image Update																											
Logistics		Post Deployment Software Support/Help Desk/FSRs																											
Major Contract Events	*Note: MDA approval required prior to RFP release	★ Tri-Star (NSWC-Grane) Task Order (SAIC)				★ Tech Refresh (EMD purchase) MCHS RFP				★ MCHS RFP				★ MCHS RFP				★ MCHS RFP											
Test & Evaluation		▽ V3.1 Testing				▽ V4.0 (Wired/Wireless) IV&V				▽ V4.1 (NxOMS) IV&V																			
Cost		CARD				Update CARD				Update LCCE																			
IA		BLK I V 3.0 ATO				BLK I V 4.0 ATO																							
		FISMA Reporting																											

★ MDA/PDA Decision, Approval (non-MS)
◆ Review
■ Documentation
▲ Milestone / Key Acquisition Event
▼ Assessments, Proposals

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2510				
EMSS: Tech Refresh V3.1 Fielding	4	2015	4	2015
JFRG II				
CDR-A	4	2015	4	2015
MS C	2	2016	2	2016
CCA	2	2016	2	2016
LD	2	2016	2	2016
IOC	4	2016	4	2016
FD	1	2017	1	2017
GCSS-MC				
GCSS-MC Increment 1 Fielding Decision	1	2016	1	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 3099 / <i>Radar System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3099: <i>Radar System</i>	178.743	8.191	11.036	13.423	-	13.423	27.444	24.670	21.687	22.299	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$2.000 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Long Range Radar (AN/TPS-59) - The AN/TPS-59A(V)3 is a transportable, three dimensional, tactical radar system that provides the Marine Air Ground Task Force (MAGTF) with long-range surveillance. It is the MAGTF's only ground based long range sensor that provides the capability to detect and report Air Breathing Targets (ABT) and track Theater Ballistic Missiles (TBM). The AN/TPS-59A(V)3 Radar System is connected to the AN/TSQ-269 Mobile - TAOM (M-TAOM) or the Common Aviation Command and Control Systems (CAC2S). It provides the air defense controllers data and may be used autonomously to conduct Ground Control Intercept, tactical en-route Air Traffic Control (ATC), or TBM alert operations via the Joint Integrated Air Missile Defense (IAMD) encrypted Link-16. The USMC extended the AN/TPS-59 service life through 2035; therefore, in order to maintain its operational relevance on the battlefield, a number of modernization efforts are initiated starting in FY17. The AN/TPS-59 radar has been continuously deployed in support of Operation Freedom Sentinel (OFS) and other contingencies.

Family of Target Acquisition Systems (FTAS) - The FTAS provides the MAGTF the capability to locate, identify, and attack enemy indirect fire weapons systems and observe and direct friendly artillery fire. The FTAS consists of the AN/TPQ-46 Firefinder Radar, the AN/TPQ-49 Lightweight Counter Mortar Radar, and the AN/TSQ-267 Target Processing Set. The FTAS is critical in the execution of counterfire and the integration of target acquisition information enabling attack by MAGTF assets. The FTAS also provides artillery firing units the ability to conduct artillery registration and other friendly fire missions. The FTAS encompasses the equipment required to support target acquisition within the target acquisition platoon and is resident in the headquarters battery of each artillery regiment. The program will continue to address system issues that arise due to DMSMS items within the FTAS. The USMC assumed the role of Primary Inventory Control Activity (PICA) for the AN/TPQ-49 in FY15 when the Army divested itself from the system.

Short/Medium Range Air Defense Radar (SHORAD or AN/TPS-63) - The AN/TPS-63 is a two-dimensional, medium-range, medium altitude, transportable radar system, which is doctrinally employed as a tactical gap-filler or as an early warning system for early deployment into the operational area. It has a 360-degree air surveillance capability at a range of 160 miles and complements the co-employed AN/TPS-59 three-dimensional, long-range, air surveillance radar system. The program will use OGAs to develop engineering change proposals related DMSMS to improved system reliability with the specific purpose of meeting increased fleet operational requirements.

Virtual Warfare Center (VWC) Support - The project team conducts fully interactive simulated war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. The VWC provides a venue for the exploration of advanced engagement concepts focused on persistent forward naval engagements in support of the MAGTF and the development of associated

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 3099 / <i>Radar System</i>
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Joint and Service specific tactics, techniques, and procedures (TTPs). VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/integration efforts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: AN/TPS-59 : Product Development</p> <p align="right">Articles:</p> <p>Description: The program will address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues by continuing use of a support contract as well as use of Other Government Activities (OGAs). The AN/TPS-59 modification will extend the service life, address DMSMS, and the DOD mandated Mode 5 Implementation for the AN/TPS-59 Radar System.</p> <p>FY 2015 Accomplishments: -Continued software integration and ECPs to address obsolescence and DMSMS issues.</p> <p>FY 2016 Plans: -Continue software integration and ECPs to address obsolescence and DMSMS issues.</p> <p>FY 2017 Base Plans: - Initiate product development for Digital Receiver and Exciter with Electronic Counter-Counter Measure and Radar Environmental Simulator resulting in an increase from FY16 to FY17 (\$2.232M).</p> <p>FY 2017 OCO Plans: N/A</p>	1.065	1.991	4.223	0.000	4.223
<p>Title: AN/TPS-59 : Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Continued MITRE/NSWC Dahlgren - Engineering Support -Continued MCSC - Engineering Support and Program Office Travel -Continued Contract Services and Support</p> <p>FY 2016 Plans: -Continue MITRE/NSWC Dahlgren - Engineering Support -Continue MCSC - Engineering Support and Program Office Travel -Continue Post Production Services and Support</p> <p>FY 2017 Base Plans:</p>	3.117	4.839	3.910	0.000	3.910

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016				
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)				
1319 / 7	PE 0206313M / Marine Corps Comms Systems	3099 / Radar System				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue MITRE/NSWC Dahlgren - Engineering Support -Continue MCSC - Engineering Support and Program Office Travel -Continue Lockheed Martin Software Development and Testing Support FY 2017 OCO Plans: N/A						
Title: AN/TPS-59: Test and Evaluation FY 2015 Accomplishments: -Initiated Field User Evaluation (FUE) for Identification Friend or Foe (IFF) -Initiated Limited User Evaluation of Transport Shelter Tech Refresh -Initiated FUE for Ops Consoles/Servers Tech Refresh FY 2016 Plans: -Initiate Joint Operational Test Approach (JOTA) for IFF -Continue Sustainment Activities Integration Testing FY 2017 Base Plans: -Continue Blackdart and Boldquest Testing Support -Complete Joint Operational Test Approach (JOTA) for IFF -Initiate Qualification Testing for the IFF Antenna, GPS and Tilt Sensor Components resulting in an increase from FY16 to FY17(\$1.1M). FY 2017 OCO Plans: N/A		1.600	1.000	2.100	0.000	2.100
Articles:		-	-	-	-	-
Title: FTAS: Support FY 2015 Accomplishments: -Established NSWC Port Hueneme - Development Engineering Support for the Family of Target Acquisition systems. -Continued MCSC Albany - Program Travel in support of Equipment and Logistics SME. FY 2016 Plans:		0.300	0.502	0.450	0.000	0.450
Articles:		-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy				Date: February 2016	
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>		Project (Number/Name) 3099 / <i>Radar System</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
<p>-Continue Tobyhanna Army Depot (TYAD)- ECP development on the AN/TSQ-267 and ECP development on the AN/TPQ-49.</p> <p>-Continue MCSC Albany - Program Travel in support of Equipment and Logistics SME.</p> <p>-Initiate the assumption of responsibilities of the primary inventory control activity (PICA) as the US Army divests from the AN/TPQ-46 and AN/TPQ-49.</p> <p>FY 2017 Base Plans:</p> <p>-Continue Tobyhanna Army Depot (TYAD)- ECP development on the AN/TSQ-267 and ECP development on the AN/TPQ-49.</p> <p>-Continue MCSC Albany - Program Travel in support of Equipment and Logistics SME.</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
<p>Title: FTAS: Product Development</p>					
<p align="right">Articles:</p>					
<p>FY 2015 Accomplishments:</p> <p>-Initiated the development of Lightweight Counter Mortar Radar (LCMR) Mobile Engineering Change Proposal (ECP) Technical Data Package.</p> <p>-Initiated the development of AN/TSQ-267 Shelter Refresh ECP Technical Data Package.</p> <p>-Initiated the development of the LCMR Technical Refresh ECP.</p> <p>-Completed software development for the Sensor Management and Collaboration Tool (SMaCT).</p> <p>FY 2016 Plans:</p> <p>-Continue development and testing of an engineering change to capitalize on products and technologies initiated by the Navy future capability for correlation/fusion of radar data within the AN/TSQ-267 which includes the Correlation and Fusion ECP for the AN/TSQ-267.</p> <p>-Initiate the assumption of the responsibilities of the primary inventory control activity (PICA) as the US Army divests from the AN/TPQ-46 and AN/TPQ-49.</p> <p>FY 2017 Base Plans:</p> <p>-Continue development and testing of ECPs for the AN/TPQ-46, LCMR, and AN/TSQ-267 to address ongoing DMSMS issues.</p> <p>FY 2017 OCO Plans:</p>					
	0.302	1.083	1.125	0.000	1.125
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy				Date: February 2016		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>		Project (Number/Name) 3099 / <i>Radar System</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
N/A						
Title: SHORAD: Support						
Articles:						
		0.178	0.195	0.194	0.000	0.194
		-	-	-	-	-
FY 2015 Accomplishments: -Continued DMSMS ECP Efforts at NSWC Crane Division.						
FY 2016 Plans: -Continue NSWC Crane - DMSMS ECP Efforts.						
FY 2017 Base Plans: -Continue DMSMS ECP Efforts at Other Government Agencies.						
FY 2017 OCO Plans: N/A						
Title: VWC: Support						
Articles:						
		1.629	1.426	1.421	0.000	1.421
		-	-	-	-	-
FY 2015 Accomplishments: -Continued simulated war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area.						
FY 2016 Plans: -Continue to simulate war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area.						
FY 2017 Base Plans: -Continue to simulate war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area.						
FY 2017 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals		8.191	11.036	13.423	0.000	13.423

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / Marine Corps Comms Systems	Project (Number/Name) 3099 / Radar System
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/465003: AN/TPS-59	7.708	25.769	14.076	-	14.076	10.894	15.365	15.731	15.873	Continuing	Continuing
• PMC/465005: FTAS	5.557	4.388	2.984	-	2.984	2.743	2.879	2.961	3.017	Continuing	Continuing
• PMC/465007: SHORAD (AN/TPS-63)	0.963	1.421	0.712	-	0.712	0.738	0.000	0.000	0.000	Continuing	Continuing
• PMC/463000: AN/TPS-59 MCHS	0.000	0.121	0.142	-	0.142	0.148	0.150	0.153	0.156	Continuing	Continuing

Remarks

D. Acquisition Strategy

Long Range Radar (AN/TPS-59) - The AN/TPS-59 is a three dimensional ground-based sensor that can detect and track long range Air Breathing Targets (ABT) at ranges of 300 nautical miles and Tactical Ballistic Missiles (TBM) at ranges of 400 nautical miles. The system is experiencing increasing Obsolescence and Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. The program will use a support contract with the original equipment manufacturer (OEM) as well as Other Government Agencies (OGAs) to develop engineering changes to resolve DMSMS and incorporate Mode 5 Identification Friend or Foe (IFF) per DOD mandate.

Family of Target Acquisition Systems (FTAS) - The Family of Target Acquisition Systems consists of 3 major components: AN/TPQ-46, AN/TPQ-49 and the AN/TSQ-267. Of these 3 systems, the AN/TPQ-46 is due to be replaced by the Ground/Air Task Oriented Radar (G/ATOR) beginning in 2019. Sustainment activities during 2016 and beyond will be limited to maintain the authority to operate (ATO) creditation. Sustainment activities on the AN/TPQ-49 are escalating due to the fact the US Army divested from the AN/TPQ-49, the USMC has assumed the responsibilities of the primary inventory control activity (PICA). Sustainment activities on the AN/TPQ-46 will begin to escalate due to the US Army divestiture from the AN/TPQ-36. The USMC will assume some sustainment responsibilities for the AN/TPQ-46 until replaced by G/ATOR. Additionally, the AN/TSQ-267 requires hardware updates in order to continue housing the suite of equipment that supports the Target Processing Center (TPC) activities.

Short/Medium Range Air Defense Radar (SHORAD or AN/TPS-63) - The AN/TPS-63 is experiencing increasing Obsolescence and Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. The program will use Other Government Agencies (OGAs) to develop engineering changes to resolve DMSMS issues.

Virtual Warfare Center (VWC) Support - The project team conducts fully interactive simulated war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/integration efforts. These efforts are led by ONR.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 3099 / <i>Radar System</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AN/TPS-59	SS/FFP	LMC : SYRACUSE, NY	4.390	0.000		0.000		3.123	Dec 2016	-		3.123	0.000	7.513	-
AN/TPS-59	C/CPFF	MARCORSYSCOM : QUANTICO, VA	0.000	1.065	Jul 2015	1.000	Jun 2016	0.000		-		0.000	0.000	2.065	-
AN/TPS-59	WR	NSWC : CRANE, IN	3.425	0.000		0.991	Feb 2016	1.100	Jun 2017	-		1.100	Continuing	Continuing	Continuing
FTAS	C/IDIQ	SRC TEC : SYRACUSE, NY	0.131	0.302	Jul 2015	0.000		0.000		-		0.000	0.000	0.433	-
FTAS	MIPR	TYAD : TOBYHANNA, PA	0.000	0.000		1.083	Feb 2016	1.125	Jan 2017	-		1.125	0.000	2.208	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	74.879	0.000		0.000		0.000		-		0.000	0.000	74.879	-
FTAS	WR	NSWC : Dahlgren, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
FTAS	MIPR	Ft Sill : Ft Sill, OK	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Subtotal			82.825	1.367		3.074		5.348		-		5.348	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AN/TPS-59	WR	NSWC : DAHLGEN, VA	9.057	0.200	Nov 2014	0.753	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing
AN/TPS-59	Various	SPAWAR : CHARLESTON, SC	4.397	0.500	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
AN/TPS-59	MIPR	MITRE : BEDFORD, MA	6.084	1.700	Mar 2015	1.300	Jan 2016	1.400	Dec 2016	-		1.400	Continuing	Continuing	Continuing
AN/TPS-59	Various	MCSC : QUANTICO, VA	1.694	0.300	Feb 2015	0.475	Oct 2015	1.130	Dec 2016	-		1.130	Continuing	Continuing	Continuing
AN/TPS-59	C/CPFF	LOCKHEED MARTIN : SYRACUSE, NY	8.789	0.000		0.000		1.380	Jan 2017	-		1.380	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 3099 / <i>Radar System</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AN/TPS-59	Various	MCSC COMP : QUANTICO, VA	5.871	0.417	Mar 2015	0.500	Jun 2016	0.000		-		0.000	Continuing	Continuing	Continuing
AN/TPS-59	MIPR	TYAD : TOBYHANNA, PA	0.000	0.000		1.811	Jan 2016	0.000		-		0.000	0.000	1.811	-
AN/TPS-63	Various	MCSC : QUANTICO, VA	0.084	0.048	Jul 2015	0.000		0.000		-		0.000	0.000	0.132	-
FTAS	WR	NSWC : Port Hueneme, CA	7.329	0.250	May 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
FTAS	MIPR	TYAD : TOBYHANNA, PA	0.693	0.000		0.452	Nov 2015	0.400	Jan 2017	-		0.400	Continuing	Continuing	Continuing
FTAS	Various	MCSC : QUANTICO, VA	2.138	0.050	Aug 2015	0.050	Oct 2015	0.050	Oct 2016	-		0.050	Continuing	Continuing	Continuing
VWC	C/CPFF	ONR : ST. LOUIS, MO	11.124	1.629	Jul 2015	1.426	Jan 2016	1.421	Dec 2016	-		1.421	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	10.782	0.000		0.000		0.000		-		0.000	0.000	10.782	-
AN/TPS-63	WR	NSWC : CRANE, IN	0.000	0.130	May 2015	0.195	Feb 2016	0.194	May 2017	-		0.194	0.000	0.519	-
Subtotal			68.042	5.224		6.962		5.975		-		5.975	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AN/TPS-59	WR	MCTSSA : CAMP PENDLETON, CA	0.000	0.000		0.000		0.624	Jun 2017	-		0.624	0.000	0.624	-
AN/TPS-59	SS/FFP	LMC : SYRACUSE, NY	0.700	1.600	Aug 2015	0.000		0.000		-		0.000	0.000	2.300	-
AN/TPS-59	WR	NSWC : CRANE, IN	0.000	0.000		1.000	Feb 2016	0.556	Feb 2017	-		0.556	0.000	1.556	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	1.195	0.000		0.000		0.000		-		0.000	0.000	1.195	-

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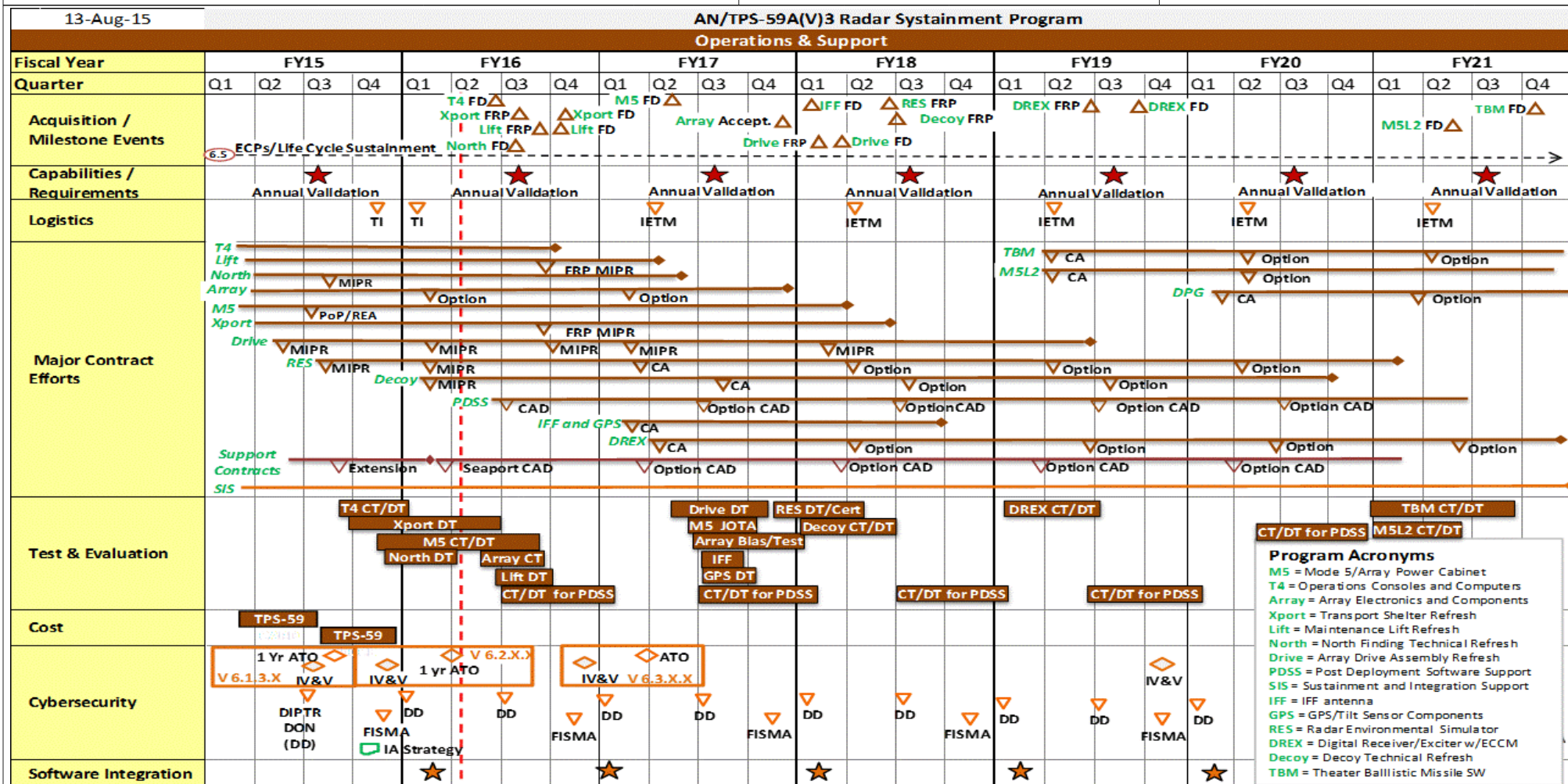
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
3099 / Radar System



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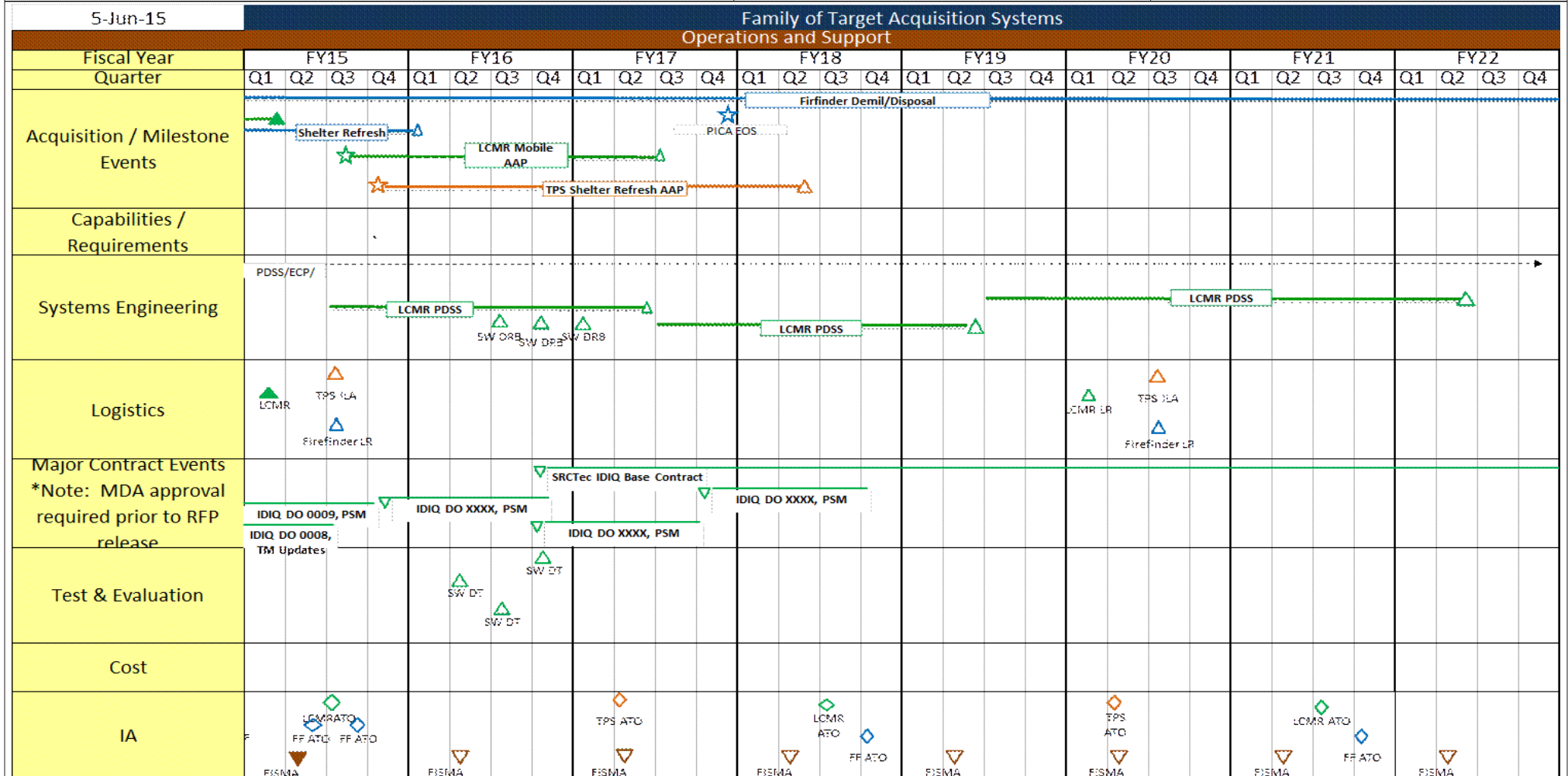
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
3099 / Radar System



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 3099 / <i>Radar System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3099				
AN/TPS-59 - Mode 5 Fielding Decision	2	2017	2	2017
AN/TPS-59 - RES FRP	2	2018	2	2018
AN/TPS-59 - DREX FRP	2	2019	2	2019
FTAS - LCMR Mobile FOC	3	2017	3	2017
FTAS - TPS Shelter Refresh FOC	2	2018	2	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	0.000	13.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Long Range Radar (AN/TPS-59) - The AN/TPS-59A(V)3 is a transportable, three dimensional, tactical radar system that provides the Marine Air Ground Task Force (MAGTF) with long-range surveillance. It is the MAGTF's only ground based long range sensor that provides the capability to detect and report Air Breathing Targets (ABT) and track Theater Ballistic Missiles (TBM). The AN/TPS-59A(V)3 Radar System is connected to the AN/TSQ-269 Mobile -TAOM (M-TAOM) or the Common Aviation Command and Control Systems (CAC2S). It provides the air defense controllers data and may be used autonomously to conduct Ground control Intercept, tactical en-route Air Traffic Control (ATC), or TBM alert operations via the joint Integrated Air Missile Defense (IAMD) encrypted Link-16. The USMC extended the AN/TPS-59 service life through 2035; therefore, in order to maintain its operational relevance on the battlefield, a number of modernization efforts are being initiated. The AN/TPS-59 radar has been continuously deployed in support of Operation Freedom Sentinel (OFS) and other contingencies.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016
Congressional Add: Radar Enhancements	0.000	13.000
FY 2015 Accomplishments: N/A		
FY 2016 Plans: N/A		
Congressional Adds Subtotals	0.000	13.000

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/465000: <i>AN/TPS-59 Mods</i>	7.708	25.769	14.076	-	14.076	10.894	15.365	15.731	15.873	Continuing	Continuing
• PMC/463000: <i>AN/TPS-59 MCHS</i>	0.000	0.121	0.142	-	0.142	0.148	0.150	0.153	0.156	Continuing	Continuing

Remarks

D. Acquisition Strategy

Long Range Radar (AN/TPS-59) - The AN/TPS-59 is a three dimensional ground-based sensor that can detect and track long range Air Breathing Targets (ABT) at ranges of 300 nautical miles and Tactical Ballistic Missiles (TBM) at ranges of 400 nautical miles. The system is experiencing increasing Obsolescence and Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues. The program will use a support contract with the original equipment manufacturer (OEM) as well as Other Government Agencies (OGAs) to develop engineering changes to resolve DMSMS and incorporate Mode 5 Identification Friend or Foe (IFF) per DOD mandate.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

E. Performance Metrics

Milestone Reviews

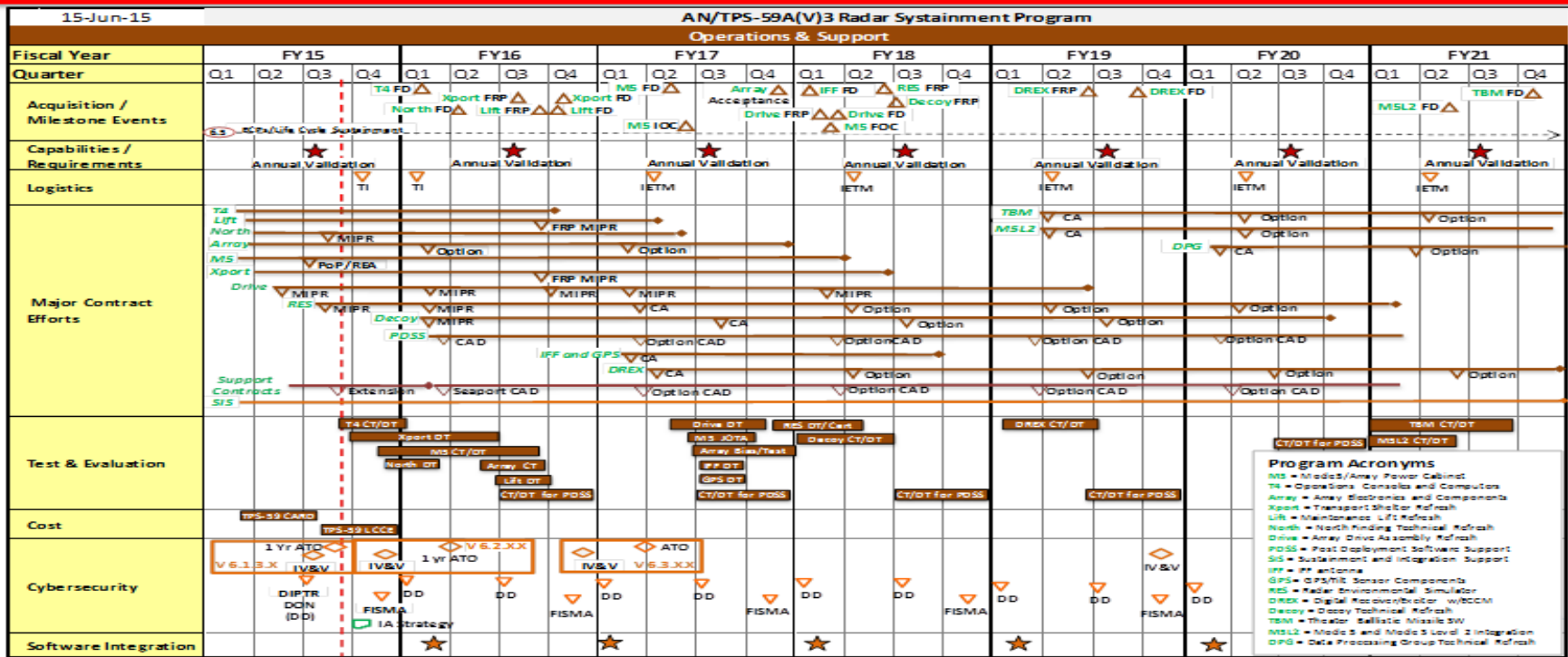
Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206313M / Marine Corps Comms
Systems

Project (Number/Name)
9999 / Congressional Adds



AN/TPS-59 Radar Program Schedule for Exhibits



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / <i>Marine Corps Comms Systems</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
AN/TPS-59 - Radar Enhancements	2	2017	2	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0206335M I (U)Common Aviation Command and Control Sys (CAC2S)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	31.568	13.431	11.850	-	11.850	7.307	4.882	4.465	4.326	Continuing	Continuing
3373: Common Aviation Command and Control System (CAC2S)	0.000	31.568	13.431	11.850	-	11.850	7.307	4.882	4.465	4.326	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): N36

Note
Funding for FY 2014 and prior is listed in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Ops Cmd & Control (C2) Sys.

A. Mission Description and Budget Item Justification
Common Aviation Command and Control System (CAC2S) - A coordinated modernization effort to replace the existing aviation command and control equipment of the Marine Air Command and Control System (MACCS) and to provide the Aviation Combat Element (ACE) with the necessary hardware, software, equipment, and facilities to effectively command, control, and coordinate aviation operations. The CAC2S system will accomplish the MACCS missions with a suite of operationally scalable modules to support the Marine Air Ground Task Force (MAGTF), Joint, and Coalition Forces. The CAC2S integrates the functions of aviation command and control into an interoperable system that will support the core competencies of all Marine Corps warfighting concepts. The CAC2S, in conjunction with MACCS organic sensors and weapons systems, supports the tenets of Expeditionary Maneuver Warfare and fosters joint interoperability. CAC2S Increment I will replace legacy aviation command and control systems in the following Marine aviation agencies: Direct Air Support Center (DASC), Tactical Air Command Center (TACC), and Tactical Air Operations Center (TAOC).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	32.495	13.431	10.629	-	10.629
Current President's Budget	31.568	13.431	11.850	-	11.850
Total Adjustments	-0.927	0.000	1.221	-	1.221
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.078	0.000			
• SBIR/STTR Transfer	-0.849	0.000			
• Program Adjustments	0.000	0.000	1.360	-	1.360
• Rate/Misc Adjustments	0.000	0.000	-0.139	-	-0.139

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206335M / (U) <i>Common Aviation Command and Control Sys (CAC2S)</i>
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Change Summary Explanation

The decrease in funding from FY16 to FY17 is due to the completion of CAC2S Developmental Testing (DT) and Initial Operational Test & Evaluation (IOT&E) in FY16 leading to Full Deployment Unit production in FY17.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)				Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3373: Common Aviation Command and Control System (CAC2S)	0.000	31.568	13.431	11.850	-	11.850	7.307	4.882	4.465	4.326	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: N36												

Note

Prior year funding is listed in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Operations Command & Control (C2) Systems.

A. Mission Description and Budget Item Justification

Common Aviation Command and Control System (CAC2S) - A coordinated modernization effort to replace the existing aviation command and control equipment of the Marine Air Command and Control System (MACCS) and to provide the Aviation Combat Element (ACE) with the necessary hardware, software, equipment, and facilities to effectively command, control, and coordinate aviation operations. The CAC2S system will accomplish the MACCS missions with a suite of operationally scalable modules to support the Marine Air Ground Task Force (MAGTF), Joint, and Coalition Forces. The CAC2S integrates the functions of aviation command and control into an interoperable system that will support the core competencies of all Marine Corps warfighting concepts. The CAC2S, in conjunction with MACCS organic sensors and weapons systems, supports the tenets of Expeditionary Maneuver Warfare and fosters joint interoperability. CAC2S Increment I will replace legacy aviation command and control systems in the following Marine aviation agencies: Direct Air Support Center (DASC), Tactical Air Command Center (TACC), and Tactical Air Operations Center (TAOC). Funding decreases, in the amount of \$1.581M, from FY 2016 to FY 2017 due to the completion of CAC2S Phase 2 Developmental Testing (DT) and Initial Operational Test & Evaluation (IOT&E) in FY 2016 leading to Full Deployment Unit (FDU) production in FY 2017.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	6.782	1.175	5.747	0.000	5.747
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Developed Engineering Change Proposals (ECP) resulting from the Engineering & Manufacturing and Development (EMD) testing for CAC2S Phase 2 Engineering Development Models (EDMs).					
- Completed validation and verification of four CAC2S Phase 2 EDMs.					
- Completed Functional Configuration Audit for CAC2S Phase 2 EDMs.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Completed CAC2S Phase 2 system integration with US Navy's Cooperative Engagement Capability (CEC), USMC Composite Tracking Network (CTN), and USMC Ground/Air Task-Oriented Radar (G/ATOR) to insure seamless interoperability between each system.</p> <p>FY 2016 Plans: - Conduct validation and verification of the four CAC2S Phase 2 Limited Deployment Units (LDUs).</p> <p>FY 2017 Base Plans: The increase in funding from FY 2016 to FY 2017 is due to: - Development of ECPs resulting from the developmental testing (DT) of LDUs. - Award engineering support contract to provide CAC2S Phase 2 ECP development support. - Design and develop solutions resulting from CAC2S Phase 2 Operational Testing (OT).</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Support and Management Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Completed program management, business, engineering, and logistical support during the EMD of CAC2S Phase 2. - Continued support of CAC2S Phase 2 in Information Assurance (IA) certification test scans. - Continued to provide test data analysis for Developmental Testing (DT) of the CAC2S Phase 2.</p> <p>FY 2016 Plans: - Continue support of Phase 2 IA certification test scans. - Continue test data analysis for CAC2S Phase 2 DT. - Conduct Operational Test Readiness Review (OTRR)</p> <p>FY 2017 Base Plans: - The decrease in funding from FY 2016 to FY 2017 is due to the decreased scope of field activity test support as a result of the completion of CAC2S Phase 2 DT and Initial Operational Test and Evaluation (IOT&E). - Continue support of CAC2S Phase 2 IA certification test scans.</p>	5.321	3.303	2.828	0.000	2.828
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Provide design and development support of the CAC2S Phase 1 Communication Subsystem (CS) to mitigate system obsolescence and to ensure accreditation is maintained. FY 2017 OCO Plans: N/A					
Title: Test and Evaluation Articles:	19.465	8.953	3.275	0.000	3.275
FY 2015 Accomplishments: - Completed Developmental Test C1 (DT-C1) of the CAC2S Phase 2 Engineering and Development Models (EDMs). - Completed CAC2S Phase 2 Operational Assessment (OA) of EDMs. - Completed Phase 1 Field User Evaluation (FUE) for ECPs to the Processing and Display Subsystem (PDS) to improve operational command post and functionality to support mission planning, decision-making, and execution tools for all aspects of Marine Aviation. - Completed Joint Interoperability Test (JIT) for CAC2S Phase 1 ECPs for PDS. - Completed CAC2S Phase 2 Electromagnetic Environmental Effects Testing. - Completed CAC2S Phase 2 Transportability Testing. - Conducted Service Link Testing (SLT) for CAC2S Phase 1 PDS and Phase 2 EDMs. - Conducted CAC2S Phase 2 interoperability Factory Qualification Test (FQT) with the US Navy's Cooperative Engagement Capability (CEC) and USMC Composite Tracking Network (CTN). FY 2016 Plans: - Conduct CAC2S Phase 2 interoperability Independent Verification and Validation (IV&V) with the CEC and CTN. - Conduct CAC2S Phase 2 Developmental Test C2 (DT-C2) with LDUs in preparation for Initial Operational Test and Evaluation (IOT&E). - Complete CAC2S Phase 2 SLT. - Conduct CAC2S Phase 2 JIT. - Conduct CAC2S Phase 2 IOT&E. FY 2017 Base Plans: - The decrease in funding from FY 2016 to FY 2017 is largely due to the completion of CAC2S Developmental Testing (DT) and IOT&E and the transition to production of CAC2S Phase 2 Full Deployment Units (FDUs). - Conduct Interoperability testing with G/ATOR.	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Provide interface support to the G/ATOR DT and Operational Assessment (OA).					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	31.568	13.431	11.850	0.000	11.850

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/4644: Common Aviation Command And Control System (CAC2S)	13.830	16.747	47.312	-	47.312	44.808	32.654	41.193	33.881	0.000	230.425

Remarks

RDT&E prior year funding is listed in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Operations Command & Control (C2) Systems.

PMC prior year funding is listed in BLI 4640 Air Operations C2 Systems, Common Aviation Command and Control Systems (CAC2S). This funding was primarily executed in support of CAC2S Phase One.

PMC funding for FY2015 and beyond is listed in BLI 4644 Common Aviation Command and Control System (CAC2S).

D. Acquisition Strategy

CAC2S will employ an evolutionary acquisition strategy utilizing an incremental and phased approach for development and fielding of the CAC2S. The Capability Production Document (CPD) identifies two increments to achieve the full requirements of CAC2S. The current acquisition strategy addresses Increment I of the CAC2S development process and focuses on the requirements that will modernize the assault and air support, air defense and control, and Aviation Combat Element (ACE) battle management capabilities of the Marine Air Command and Control System (MACCS). Increment I of the CAC2S will be accomplished through a two phased approach. Phase 1 addresses the requirements to establish the baseline CAC2S capabilities for the MACCS and improve Air Command and Control (AC2) performance and effectiveness. Phase 2 will address the requirements for remaining ACE Battle Management Command & Control (BMC2) requirements.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	WR	NSWC CD : Crane, IN	0.000	1.031	Nov 2014	0.753	Nov 2015	0.258	Nov 2016	-		0.258	0.896	2.938	-
Engineering Manufacturing and Development	C/FPIF	General Dynamics : Pheonix, AZ	0.000	3.800	Nov 2014	0.000		0.000		-		0.000	16.544	20.344	59.922
Software Development	WR	NSWC DD : Dahlgren, VA	0.000	1.951	Nov 2014	0.422	Nov 2015	0.813	Nov 2016	-		0.813	0.000	3.186	-
Hardware and Software Engineering	C/CPIF	TBD : TBD	0.000	0.000		0.000		4.676	Jan 2017	-		4.676	0.000	4.676	-
Subtotal			0.000	6.782		1.175		5.747		-		5.747	17.440	31.144	-

Remarks
The increase in funding from FY16 to FY17 of \$4.572M is due to development of ECPs resulting from the developmental testing (DT) of LDUs.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Reliability Assessment	MIPR	AMSSA : Aberdeen, MD	0.000	0.501	Nov 2014	0.300	Nov 2015	0.185	Nov 2016	-		0.185	0.238	1.224	-
Architecture Support	WR	SpaWar : Charleston, SC	0.000	0.250	Nov 2014	0.200	Nov 2015	0.000		-		0.000	0.350	0.800	-
Interoperability Certification	MIPR	JITC : Fort Huachuca, AZ	0.000	0.500	Apr 2015	0.300	Nov 2015	0.077	Nov 2016	-		0.077	0.265	1.142	-
Interoperability Certification	Sub Allot	MCTSSA : Camp Pendleton, CA	0.000	0.170	Nov 2014	0.000		0.000		-		0.000	0.000	0.170	-
Data Analysis	WR	NSWC Corona : Corona, CA	0.000	0.376	Nov 2014	0.000		0.000		-		0.000	0.000	0.376	-
Logistics Support	Sub Allot	LogCom : Albany, GA	0.000	0.502	Nov 2014	0.219	Nov 2015	0.000		-		0.000	0.302	1.023	-
Safety Engineering	C/FP	MCSC Safety : TBD	0.000	0.250	Nov 2014	0.175	Nov 2015	0.411	Nov 2016	-		0.411	0.095	0.931	-
Travel	Various	Travel : TBD	0.000	0.000		0.143	Oct 2015	0.072	Oct 2016	-		0.072	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Engineering	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.000		1.117	Nov 2016	-		1.117	0.000	1.117	-
Hardware Engineering	WR	NSWC CD : Crane, IN	0.000	0.000		0.000		0.399	Nov 2016	-		0.399	0.000	0.399	-
Subtotal			0.000	2.549		1.337		2.261		-		2.261	-	-	-

Remarks
The increase in funding from FY16 to FY17 is to provide design and development support of the CAC2S Phase 1 Communication Subsystem (CS) to mitigate system obsolescence and to ensure accreditation is maintained.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Testing and Evaluation	WR	NSWC - Port Huenueme : Port Huenueme, CA	0.000	1.001	Nov 2014	0.750	Nov 2015	0.597	Nov 2016	-		0.597	0.955	3.303	-
Testing and Evaluation	Sub Allot	MCOTEA : Quantico, VA	0.000	1.338	Nov 2014	1.200	Jan 2016	0.500	Jan 2017	-		0.500	3.465	6.503	-
Testing and Evaluation	WR	MACCS - 2 : Cherry Point, NC	0.000	0.500	Nov 2014	0.261	Jan 2016	0.000		-		0.000	0.125	0.886	-
Testing and Evaluation	Sub Allot	MCTSSA : Camp Pendleton, CA	0.000	6.200	Jan 2015	0.876	Nov 2015	0.288	Nov 2016	-		0.288	0.952	8.316	-
Testing and Evaluation	MIPR	NAWC AB : Patuxent River, MD	0.000	6.000	Nov 2014	1.863	Jan 2016	0.000		-		0.000	1.258	9.121	-
Testing and Evaluation	WR	NSWC CD : Crane, IN	0.000	4.426	Jan 2015	2.652	Nov 2015	0.555	Nov 2016	-		0.555	7.445	15.078	-
Testing and Evaluation	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		1.351	Nov 2015	1.335	Nov 2016	-		1.335	0.000	2.686	-
Subtotal			0.000	19.465		8.953		3.275		-		3.275	14.200	45.893	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering and Program Management Support	C/FFP	Get It Done (GID) Solutions LLC : Fredericksburg, VA	0.000	1.752	Apr 2015	0.980	Mar 2016	0.000		-		0.000	0.000	2.732	19,096.227
Sensor Management	C/FFP	MITRE : Bedford, MA	0.000	1.020	Oct 2014	0.986	Oct 2015	0.567	Oct 2016	-		0.567	2.958	5.531	-
Subtotal			0.000	2.772		1.966		0.567		-		0.567	2.958	8.263	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	31.568	13.431	11.850	-	11.850	-	-

Remarks
Funding decreases, in the amount of \$1.442M, from FY 2016 to FY 2017 is due to the completion of CAC2S Phase 2 Developmental Testing (DT) and Initial Operational Test & Evaluation (IOT&E) in FY 2016.

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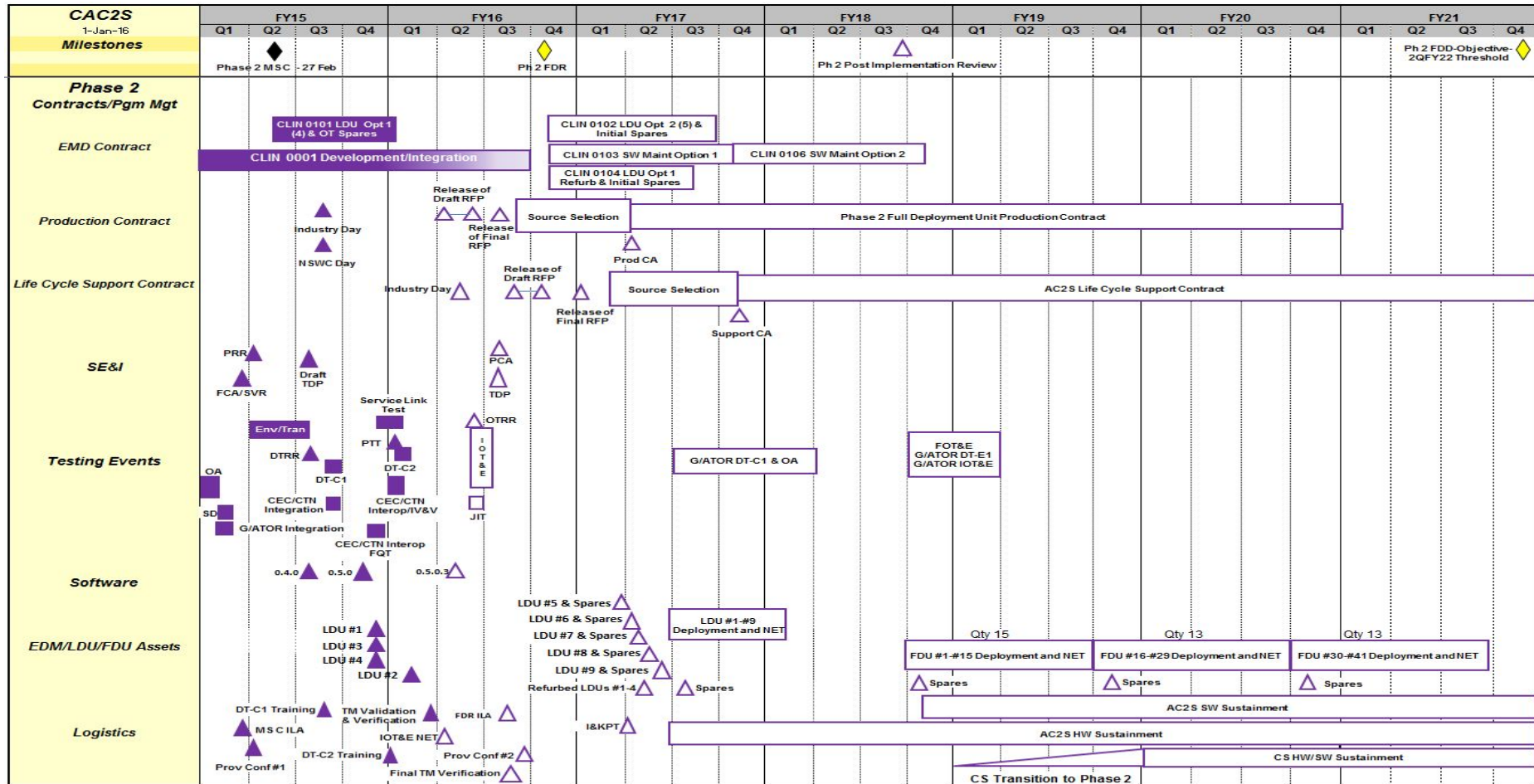
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206335M / (U)Common Aviation
Command and Control Sys (CAC2S)

Project (Number/Name)
3373 / Common Aviation Command and
Control System (CAC2S)



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3373				
CAC2S Schedule: Operational Assessment	1	2015	1	2015
CAC2S Schedule: Service Link Test	4	2015	1	2016
CAC2S Schedule: Milestone C	2	2015	2	2015
CAC2S Schedule: Coop Engagement Capability/Composite Tracking Network Certification and Interoperability Test	4	2015	4	2015
CAC2S Schedule: Limited Deployment Units (LDU) Option 1 Build 1-4 (PMC BL 464400)	2	2015	1	2016
CAC2S Schedule: Joint Interoperability Test	2	2016	2	2016
CAC2S Schedule: Developmental Test Readiness Review	3	2015	3	2015
CAC2S Schedule: Developmental Test - C1	3	2015	3	2015
CAC2S Schedule: Developmental Test - C2	1	2016	1	2016
CAC2S Schedule: Operational Test Readiness Review	2	2016	2	2016
CAC2S Schedule: Initial Operational Test and Evaluation	2	2016	3	2016
CAC2S Schedule: Full Deployment Review	4	2016	4	2016
CAC2S Schedule: Limited Deployment Units (LDU) 5-9 deliveries, deployment and NET (PMC BL 464400)	1	2017	3	2017
CAC2S Schedule: Full Deployment Unit (FDU) Production Contract Award (PMC BL 464400)	2	2017	1	2021
CAC2S Schedule: Full Deployment Unit (FDU) 1-15 deployment and NET (PMC BL 464400)	4	2018	4	2019
CAC2S Schedule: Interoperability Testing for G/ATOR Developmental Test - C1 & Operational Assessment	3	2017	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206623M / <i>MC Ground Cmbt Spt Arms Sys</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	496.490	49.176	48.590	47.877	-	47.877	47.582	45.514	43.622	44.522	Continuing	Continuing
1555: <i>Lt Armored Vehicle Prog</i>	100.800	6.671	11.297	13.879	-	13.879	4.503	2.491	2.490	2.485	Continuing	Continuing
1901: <i>MC Grnd Wpnry Prod Improvement</i>	28.687	7.958	3.719	3.689	-	3.689	4.305	5.432	5.186	5.293	Continuing	Continuing
2086: <i>Soldier/Marine Enhancement</i>	22.670	5.777	2.253	2.760	-	2.760	4.184	4.175	3.888	3.974	Continuing	Continuing
2112: <i>Lightweight 155mm Howitzer</i>	0.193	1.987	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.180
2237: <i>Amphibious Vehicle Test</i>	4.843	2.075	0.994	0.991	-	0.991	0.979	0.903	0.921	0.942	Continuing	Continuing
2315: <i>Training Devices/Simulators</i>	112.370	5.668	12.101	13.605	-	13.605	14.791	14.014	13.856	14.161	Continuing	Continuing
2503: <i>Initial Issue</i>	39.700	4.783	1.241	3.462	-	3.462	4.385	4.794	4.351	4.450	Continuing	Continuing
2513: <i>Body Armor</i>	45.100	2.764	3.160	2.746	-	2.746	4.814	4.728	4.704	4.809	Continuing	Continuing
2928: <i>Exp Indirect Fire Gen Supt Wpn Sys</i>	9.657	1.807	1.381	1.054	-	1.054	2.976	2.614	2.142	2.189	Continuing	Continuing
3098: <i>Fire Support System</i>	129.185	9.207	11.940	5.242	-	5.242	6.099	5.818	5.549	5.671	Continuing	Continuing
4002: <i>Family of Raid Reconnaissance</i>	3.285	0.479	0.504	0.449	-	0.449	0.546	0.545	0.535	0.548	Continuing	Continuing

Note

NOTE: Funding for the Assault Amphibious Vehicle (AAV) program for FY 2015 and beyond was realigned to Program Element 0206629M Project 2938.

A. Mission Description and Budget Item Justification

This PE provides modification to Marine Corps Expeditionary Ground Force Weapon Systems to increase lethality, range, survivability and operational effectiveness. In addition, the PE provides for the development of AAV7A1 reliability, maintainability, operational and safety modifications, improvements in command and control, and product improvements to the family of LAVs. The AVTB provides facilities and personnel which perform a broad range of testing, repair and technical services to amphibious vehicles. This program is funded under Operational Systems Development Program Element (PE) because it encompasses engineering and manufacturing and manufacturing development for upgrades of existing systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	52.377	56.769	57.213	-	57.213
Current President's Budget	49.176	48.590	47.877	-	47.877
Total Adjustments	-3.201	-8.179	-9.336	-	-9.336
• Congressional General Reductions	-	-0.063			
• Congressional Directed Reductions	-	-8.116			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.995	0.000			
• SBIR/STTR Transfer	-1.210	0.000			
• Program Adjustments	0.000	0.000	-10.649	-	-10.649
• Rate/Misc Adjustments	0.004	0.000	1.313	-	1.313

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1555 / Lt Armored Vehicle Prog
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1555: Lt Armored Vehicle Prog	100.800	6.671	11.297	13.879	-	13.879	4.503	2.491	2.490	2.485	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Family of Light Armored Vehicles (FOLAV) consists of six fielded LAV configurations and one communications/intelligence-configured asset on a LAV chassis. The FOLAV provides a logistically self-contained, highly mobile, and lethal combined arms combat system to the Marine Air Ground Task Force (MAGTF). The LAV Product Improvement Program funds modification and sustainment activities and the development and testing of modifications. These programs will ensure that the FOLAV will be capable of conducting its assigned missions by enhancing lethality and survivability; reliability, availability, maintainability and durability; as well as reducing operations and support costs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: LAV MODIFICATIONS	6.671	11.297	13.879	0.000	13.879
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued the development of the Engineering Change Proposal (ECP), Integrated Logistic Support (ILS) data, Modification Instructions, and Technical Publications, for the Mobility and Obsolescence Kits. The MOB Kit consists of Power pack, Driveline, Steering, Electrical Upgrade, Suspension, Hull Modifications, and Ballistic Protection Upgrade Package (BPUP). Development includes holding Systems Engineering Technical Reviews to include Integrated Baseline Review (IBR), Preliminary Design Review (PDR) #1 & #2, Critical Design Review #1 and #2 and Program Management (PM) Support.					
FY 2016 Plans:					
-Continue Engineering Change Proposal (ECP), Integrated Logistic Support (ILS) data development, Technical Publications Development, Critical Design Review #3, PDR #3, for the Obsolescence Kits consisting of Power pack, Driveline, Steering, Drivers Instrument Panel (DIP), Hull Modifications, and Slip Ring and PM support. Start Modification Instruction development for the LAV and deliver initial vehicle prototypes.					
FY 2017 Base Plans:					
- Continue Engineering Change Proposal (ECP).					
- Initiate Test Planning to include Developmental Test and Operational Assessment.					
- Initiate Milestone (MS) C Preparation; Integrated Logistic Support (ILS) data development, and Technical Publications Development.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1555 / Lt Armored Vehicle Prog
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Initiate preparation of Long Lead Item and Obsolescence Production Kit contract. Production Kits for the Obsolescence efforts consists of Power pack, Driveline, Steering, DIP, Hull Modifications, and Slip Ring and PM support. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	6.671	11.297	13.879	0.000	13.879

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/2038: LAV PIP	72.736	85.979	53.423	-	53.423	73.785	62.330	125.653	114.803	Continuing	Continuing
• PMC/7000: LAV Spares	1.452	1.288	0.628	-	0.628	1.829	5.804	5.949	6.110	Continuing	Continuing

Remarks

D. Acquisition Strategy
The LAV Modification & Sustainment program funds important vehicle modifications, support equipment and tools and other projects that increase LAV reliability and readiness while simultaneously reducing operations and support costs. The Marine Corps Program Management LAV Modification Team uses multi-disciplined integrated project teams consisting of engineering, logistical, contracting and financial personnel to manage Modification projects. The contract for the Obsolescence project was issued as a Sole Source contract to the Original Equipment Manufacturer (OEM). Currently the LAV Modification and Sustainment program will capture the Obsolescence kits consisting of Power Pack, Driveline, Steering, Drivers Instrument Panel (DIP), Hull Modifications and Slip Ring. The Obsolescence program will address the Family of Light Armored Vehicles (FOLAV) automotive system obsolescence and reduced performance due to increased Gross Vehicle Weight (GVW). This will be achieved through acquisition and the integration of replacement Power pack, Driveline, Steering, DIP, Hull Modifications, and Slip Ring. This effort will require deliverable kits during the Engineering & Manufacturing Development (EMD) phase, such as Engineering Change Proposals (ECPs) and Modification Instructions (MI) for each of the 7 LAV variants and all Integrated Logistics Support (ILS) products (training, technical publications, tools, test equipment, provisioning, etc.) to support Developmental Testing, Operational Assessment, Initial Operational Test and Evaluation and fielding.

E. Performance Metrics
Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1555 / Lt Armored Vehicle Prog
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Proj 1555: Prior Years Cumulative Funding	Various	N/A : N/A	37.397	0.000		0.000		0.000		-		0.000	0.000	37.397	-
ILS DATA DEV (MOD)	C/CPFF	GDLS : London Ontario, Canada	10.713	2.638	May 2015	2.300	Feb 2016	2.200	Feb 2017	-		2.200	Continuing	Continuing	Continuing
PRODUCT DEV/ PROTOTYPES (MOD)	C/CPFF	GDLS : London Ontario, Canada	27.922	0.900	May 2015	7.028	Feb 2016	9.393	Feb 2017	-		9.393	Continuing	Continuing	Continuing
Subtotal			76.032	3.538		9.328		11.593		-		11.593	-	-	-

Remarks

The increase from FY16 to FY17 is in support of the installation of obsolescence kits onto test vehicles.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Proj 1555: Prior Years Cumulative Funding	Various	N/A : N/A	10.505	0.000		0.000		0.000		-		0.000	0.000	10.505	-
Program Mgmt (MOD)	MIPR	TACOM : Warren, MI	5.684	1.712	Apr 2015	1.969	Dec 2015	2.186	Dec 2016	-		2.186	Continuing	Continuing	Continuing
Swim Study(MOD)	MIPR	TARDEC : Warren, MI	0.000	1.351	Jul 2015	0.000		0.000		-		0.000	0.000	1.351	-
Subtotal			16.189	3.063		1.969		2.186		-		2.186	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Proj 1555: Prior Years Cumulative Funding	Various	N/A : N/A	6.105	0.000		0.000		0.000		-		0.000	0.000	6.105	-
Devl/Oper T&E (MOD)	MIPR	RTC : AL	1.394	0.070	May 2015	0.000		0.100	Oct 2016	-		0.100	Continuing	Continuing	Continuing
Subtotal			7.499	0.070		0.000		0.100		-		0.100	-	-	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1555 / Lt Armored Vehicle Prog

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>LAV Modification and Sustainment</i>				
Integration Contract	1	2015	4	2018
Developmental Testing/Operational Assessment	1	2018	4	2018
Long Lead Material Contract Award	3	2018	3	2018
MS-C	1	2019	1	2019
IOC	2	2020	2	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1901: MC Grnd Wpnry Prod Improvement	28.687	7.958	3.719	3.689	-	3.689	4.305	5.432	5.186	5.293	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops joint and Marine Corps unique improvements to infantry weapons technology, non-lethal systems technology, improvements for Night Vision Equipment, Rifle Combat Optics, Family of Individual Optics, and monitors national and international weapons developments.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Mission Payload Module (MPM)	3.175	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Mission Payload Module (MPM) launches non-lethal payloads to ranges with broad area coverage, duration of effects, and volume of fire. This will be initially deployed from the Marine Corps Transparent Armored Gun Shield (MCTAGS). MPM will deliver counter-personnel, non-lethal effects applicable to controlling crowds, denying/defending areas, controlling access, and engaging threats. As of FY15, investments in this program are leveraged with funding from the Joint Non-Lethal Weapons Program, PE 0603851M.					
FY 2015 Accomplishments: -Initiated preliminary design review (PDR).					
FY 2016 Plans: - MPM Engineer and Manufacturing Development (EMD) contract terminated for convenience and the program was returned to Technology Maturation and Risk Reduction acquisition phase under the purview of the Joint Non-Lethal Weapons Program, PE 0603851M.					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Title: Escalation of Force-Equipment (EoF-E)	0.135	0.089	0.038	0.000	0.038
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Escalation of Force Equipment (EoF-E) is a mod funding line to support/sustain all fielded EoF equipment and capabilities. Additionally, EoF-E supports type-classification, testing and procurement of new advancements and technologies to provide an increased capability over existing or obsolescent equipment currently in or associated with the Escalation of Force Mission Modules (EoF-MMs).</p> <p>FY 2015 Accomplishments: -Completed evaluation and upgrade of the translation capability within the EoF-MM. -Initiated assessment of upgrades to the EoF-MM and LA-9/P Lasers to sustain/support equipment and capabilities.</p> <p>FY 2016 Plans: -Continue assessment of upgrades and replacements to the EoF-MM to sustain/support equipment and capabilities. -Complete assessment of upgrades and replacements to the LA-9/P Lasers to sustain/support equipment and capabilities.</p> <p>FY 2017 Base Plans: -Continue assessment of upgrades and replacements to the EoF-MM to sustain/support equipment and capabilities. -Continue assessment of upgrades and replacements to the OI Lasers to sustain/support equipment and capabilities. -Initiate upgrade of EoF Capabilities.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Combat Optics</p> <p align="right">Articles:</p> <p>Description: Combat Optics is a program that provides for research and development, as well as ammunition to support testing and assessment of optical systems and implementation of modifications for these systems as well as life-cycle management efforts. The research and development of future capabilities include, but are not limited to, fused/multi-spectral (e.g., combined image intensifier, thermal imaging, and short wave infrared) optical and laser systems. Additionally, this line supports the procurement of over 600,000 magnified day optics, thermal imagers, image intensifier, lasers, and illuminators principle end items (PEI) due to combat losses,</p>	2.575	1.751	1.748	0.000	1.748
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>wash-outs, and increases in Approved Acquisition Objectives. Sustainment efforts include sustainment of optics capabilities and/or improvements to the performance, maintainability, supportability, service life, ergonomics, and safety enhancements.</p> <p>FY 2015 Accomplishments: -Initiated technology development and evaluation to support life cycle extension and improvement of current optics and inform future optics requirements generation to address capability gaps. -Initiated coordination with United States Army on long wave and short wave infrared technologies.</p> <p>FY 2016 Plans: -Continue technology development and evaluation to support life cycle extension and improvement of current optics and inform future optics requirements generation to address capability gaps. -Continue coordination with United States Army on long wave and short wave infrared technologies. -Initiate and complete design of a Dual-Channel Heavy Sight (DCHS) prototype to inform the development of a joint capability document for future production.</p> <p>FY 2017 Base Plans: -Continue technology development and evaluation to support life cycle extension and improvement of current optics and inform future optics requirements generation to address capability gaps. -Continue coordination with United States Army on long wave and short wave infrared technologies. -Initiate fabrication and testing of DCHS prototypes, and purchase ammunition to support testing and evaluation.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Company and Battalion Mortars</p> <p align="right">Articles:</p> <p>Description: This funding is used to provide system development and demonstration efforts and pre-Milestone C activities, for the Next Generation of Lightweight Handheld Mortar Ballistic Computer software and hardware.</p> <p>FY 2015 Accomplishments: -Initiated system development and demonstration efforts. -Initiated pre-Milestone C activities. -Initiated development of software for Lightweight Handheld Mortar Ballistic Computer.</p> <p>FY 2016 Plans:</p>	1.075	0.986	0.494	0.000	0.494
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue system and software development and demonstration efforts.</p> <p>-Continue pre-Milestone C activities.</p> <p>-Initiate purchase of Non-developmental Items (NDI) for testing and evaluation of candidate systems and modifications for Company and Battalion Mortars, and for the development of software for Lightweight Handheld Mortar Ballistic Computer.</p> <p>FY 2017 Base Plans:</p> <p>-Continue pre-Milestone C activities (including Developmental Testing).</p> <p>-Continue purchase of NDI for testing and evaluation of candidate systems and modifications for Company and Battalion Mortars, and for the development of software for Lightweight Handheld Mortar Ballistic Computer.</p> <p>-Complete system and software development, and demonstration efforts.</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
<p>Title: Family of Infantry Weapons Systems (FIWS)</p> <p align="right">Articles:</p> <p>Description: Family of Infantry Weapons Systems (FIWS) is a program that provides for continuous monitoring, research and development, assessment of and implementation of Joint Service and USMC unique system modifications. Efforts such as: sustain weapon capability, enhance gunner's protection kits and/or improve the performance, maintainability, supportability, service life, ergonomics, and safety enhancements.</p> <p>FY 2015 Accomplishments:</p> <p>-Continued Product Improvement Program testing for various Machine Gun Mounts.</p> <p>-Continued efforts to analyze, design, develop, and field modifications for Infantry Weapons (to include Rifle Barrel Modifications, Rifle Barrel Twist study, and M27 Infantry Automatic Rifle ammo compatibility study).</p> <p>-Initiated performance evaluation of various types of ammunition currently under development.</p> <p>FY 2016 Plans:</p> <p>-Continue Product Improvement Program testing for various emergent requirements.</p> <p>-Continue efforts to analyze, design, develop, and field modifications for Infantry Weapons (to include gunner's protection kits).</p> <p>-Continue performance evaluation on various types of ammunition currently under development.</p> <p>-Initiate product improvement of Gunner Protection Kits (GPK) in order to meet emerging requirements outlined in Capability Production Document.</p>	0.998	0.893	1.409	0.000	1.409
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Initiate efforts to analyze, design, and develop a GPK that meets emergent requirements for vehicle stowage aboard ships while maintaining existing protection levels.					
<i>FY 2017 Base Plans:</i> -Continue Product Improvement Program testing for various emergent requirements. -Continue efforts to analyze, design, develop, and field modifications (to include gunner's protection kits). -Continue performance evaluation of various types of ammunition currently under development. -Continue product improvement of GPK in order to meet emerging requirements outlined in Capability Production Document. -Continue efforts to analyze, design, and develop a GPK that meets emergent requirements for vehicle stowage aboard ships while maintaining existing protection levels.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	7.958	3.719	3.689	0.000	3.689

C. Other Program Funding Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTEN/2319 - MPM: Mission Payload Module-Joint Non-Lethal Weapons Directorate	4.236	6.826	6.700	-	6.700	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/2208: Escalation of Force - Equip (EoF-E)	0.623	0.488	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	53.082
• PMC/4930: Combat Optics	4.444	2.018	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,503.177
• PMC/2220-01: Family of Infantry Weapons Systems	3.122	6.802	4.675	0.572	5.247	5.287	5.273	5.162	5.263	Continuing	Continuing
• PMC/2220-02: Company and Battalion Mortars	0.881	1.122	0.000	-	0.000	0.810	3.339	3.407	3.474	Continuing	Continuing
• RDTEN/2319 - OI: Ocular Interruption-Joint Non-Lethal Weapons Directorate	2.376	1.608	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.984
• PMC/4620: Combat Optics	0.000	0.000	3.272	-	3.272	6.544	9.329	9.502	9.688	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/2220-03: <i>Escalation of Force - Equip (EoF-E)</i>	0.000	0.000	1.898	-	1.898	1.748	1.398	1.426	1.454	Continuing	Continuing

Remarks

D. Acquisition Strategy

These programs range from off-the-shelf modifications to developmental items for safety, reliability, and technology upgrades to meet Marine Corps requirements.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Company and Battalion Mortars	MIPR	Aberdeen Test Center : Aberdeen, MD	0.000	0.154	Mar 2016	0.000		0.000		-		0.000	0.000	0.154	-
Company and Battalion Mortars	MIPR	Picatinny Arsenal : Picatinny, NJ	0.882	0.800	Jul 2015	0.736	Mar 2016	0.494	Mar 2017	-		0.494	Continuing	Continuing	Continuing
Escalation of Force Equipment	Various	MCSC : QUANTICO, VA	0.394	0.135	May 2015	0.089	May 2016	0.000		-		0.000	0.000	0.618	-
Family of Infantry Weapons Systems	C/FFP	MCSC : Quantico, VA	0.272	0.000		0.040	Mar 2016	0.718	Mar 2017	-		0.718	Continuing	Continuing	Continuing
Combat Optics	Various	MCSC : Quantico, VA	1.853	0.692	Nov 2014	1.361	Mar 2016	1.413	Nov 2016	-		1.413	Continuing	Continuing	Continuing
Combat Optics	Various	Night Vision Lab : Ft. Belvoir, VA	1.856	1.257	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Combat Optics	Various	MCSC : Travel	0.008	0.000		0.050	Jan 2016	0.000		-		0.000	0.000	0.058	-
Proj 1901: Prior Years Cum Funding (Product Dev)	Various	Various : Various	0.954	0.000		0.000		0.000		-		0.000	0.000	0.954	-
Subtotal			6.219	3.038		2.276		2.625		-		2.625	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Company and Battalion Mortars	WR	NSCW : Dahlgren, VA	0.000	0.121	Mar 2016	0.250	Mar 2016	0.000		-		0.000	0.000	0.371	-
Mission Payload Module	Various	Various : Various	0.000	1.879	Jan 2016	0.000		0.000		-		0.000	0.000	1.879	-
Escalation of Force Equipment	C/FFP	HECOE : San Antonio, TX	0.000	0.000		0.000		0.038	Oct 2016	-		0.038	0.000	0.038	-
Family of Infantry Weapons Systems	Various	Travel/IMPAC : Quantico, VA	0.077	0.062	Sep 2015	0.099	Sep 2016	0.151	Sep 2017	-		0.151	Continuing	Continuing	Continuing
Combat Optics	C/FFP	MCSC : Quantico, VA	1.226	0.626	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement
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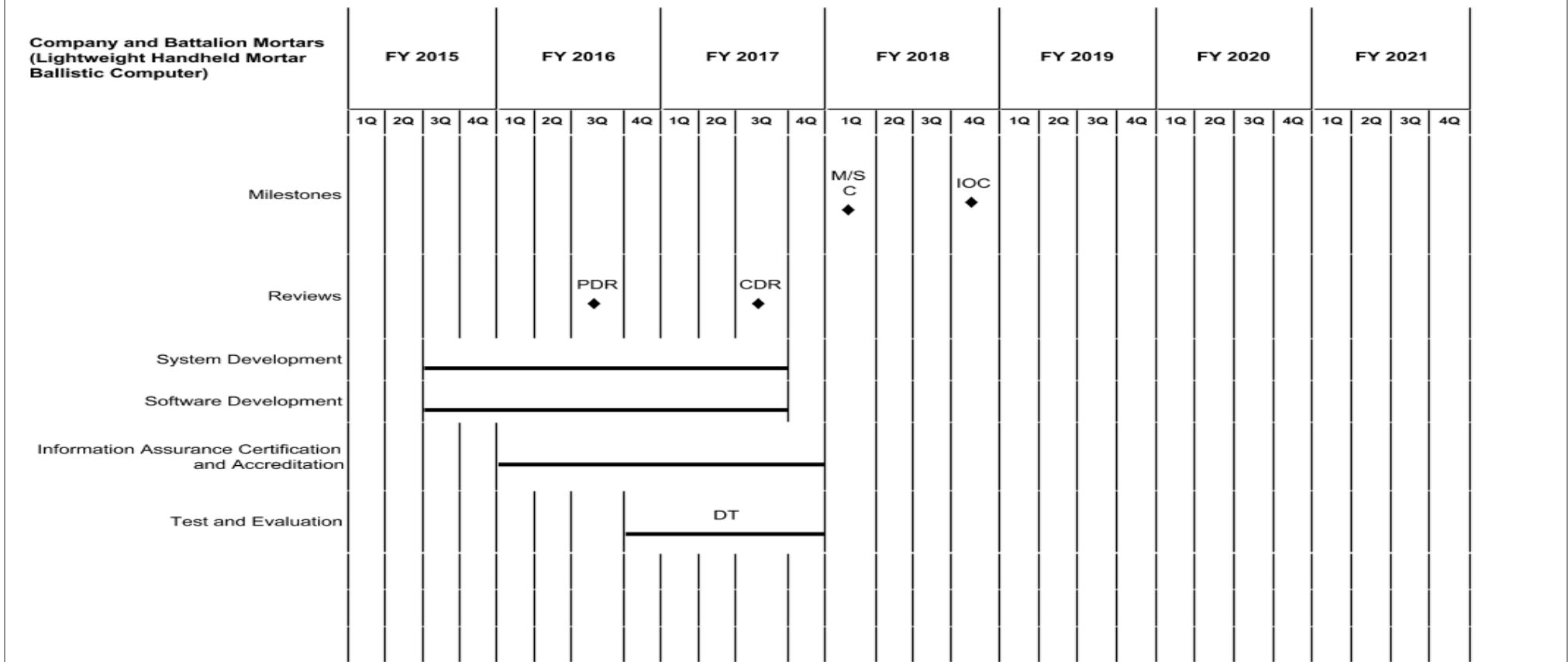
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combat Optics	C/FFP	NSCW : Crane, IN	0.000	0.000		0.340	Jul 2016	0.301	Feb 2017	-		0.301	0.000	0.641	-
Proj 1901: Prior Years Cum Funding (Support)	Various	Various : Various	9.770	0.000		0.000		0.000		-		0.000	0.000	9.770	-
Subtotal			11.073	2.688		0.689		0.490		-		0.490	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Family of Infantry Weapons Systems	MIPR	Aberdeen Test Center : Aberdeen, MD	0.000	0.288	May 2016	0.240	May 2016	0.000		-		0.000	0.000	0.528	-
Mission Payload Module	C/CPFF	General Dynamics : Bothell, Washington	0.000	1.296	Oct 2015	0.000		0.000		-		0.000	0.000	1.296	-
Family of Infantry Weapons Systems	WR	NSWC Crane : Crane, IN	0.205	0.247	Dec 2014	0.260	Mar 2016	0.273	Jan 2017	-		0.273	Continuing	Continuing	Continuing
Family of Infantry Weapons Systems	WR	NSWC : Various Navy Labs	0.000	0.059	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Family of Infantry Weapons Systems	WR	NSWC : Crane, IN	0.000	0.100	May 2015	0.000		0.000		-		0.000	0.000	0.100	-
Family of Infantry Weapons Systems	WR	PM Ammo : Quantico, VA	0.190	0.000		0.000		0.000		-		0.000	0.000	0.190	-
Combat Optics	WR	PM Ammo : Quantico, VA	0.000	0.000		0.000		0.034	Dec 2016	-		0.034	0.000	0.034	-
Proj 1901: Prior Years Cum Funding (T&E Eval)	Various	Various : Various	9.735	0.000		0.000		0.000		-		0.000	0.000	9.735	-
Subtotal			10.130	1.990		0.500		0.307		-		0.307	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpny Prod Improvement
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2017PB - 0206623M - 1901

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpny Prod Improvement
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Escalation of Force Equipment (EoF-E)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Management Support	Acq/Log/Engineering Support																											
Modifications and Upgrades					Laser to Sustain/Support Equipment and Capabilities Updrades																							
	Various EoF Upgrades																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpny Prod Improvement
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Mission Payload Module (MPM)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Production	EMD																											
				▲ PDR				▲ EMD Terminated																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 1901 / MC Grnd Wpnry Prod Improvement

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Company and Battalion Mortars (Lightweight Handheld Mortar Ballistic Computer)</i>				
Milestones: Milestone C	1	2018	1	2018
Milestones: IOC	4	2018	4	2018
Reviews: PDR	3	2016	3	2016
Reviews: CDR	3	2017	3	2017
System Development: System Development	3	2015	3	2017
Software Development: Software Development	3	2015	3	2017
Information Assurance Certification and Accreditation: Information Assurance Certification and Accreditation	1	2016	4	2017
Test and Evaluation: Developmental Test	4	2016	4	2017
<i>Escalation of Force Equipment (EoF-E)</i>				
Management Support: Acq/Log/Engineering Support	2	2015	3	2015
Modifications and Upgrades: Laser to Sustain/Support Equipment and Capabilities	1	2016	3	2016
Modifications and Upgrades: Various EoF Upgrades	2	2015	2	2019
<i>Mission Payload Module (MPM)</i>				
Production: Engineering, Manufacturing & Development (EMD)	1	2015	1	2016
Production: Production: Preliminary Design Review	4	2015	4	2015
Production: EMD Terminated	1	2016	1	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 2086 / Soldier/Marine Enhancement			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2086: <i>Soldier/Marine Enhancement</i>	22.670	5.777	2.253	2.760	-	2.760	4.184	4.175	3.888	3.974	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$0.200 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Marine Expeditionary Rifle Squad (MERS) mission is to manage the infantry squad, "squad as a system", by conducting integration, systems engineering, human factors, and modernization efforts across all the products that are worn, carried, and consumed by the rifle squad. Physical integration, capability analysis, modeling and simulation, ergonomics, and usability assessments are facilitated by this program in working with the various program managers and project officers in the development of their unique items that contribute to the squads overall capabilities. Weight and volume management are fundamental considerations in the insertion or modernization of any squad equipment. MERS works with Joint and NATO soldier modernization programs to harvest new technologies to increase the capability of the rifle squad. The program also ensures the integration of the rifle squad into the various mobility platforms currently in service and being developed to ensure a Marine and his equipment can operate effectively. This program is essential to ensure the combined synergistic equipment effects enhance the war-fighting functions of the Marine rifle squad towards the strategic Marine Corps war fighting vision for the future.

Marine Enhancement Program (MEP) provides Research, Development, Test and Evaluation funding for low visibility, low cost items. It focuses on items of equipment which will benefit the individual Marine by reducing the load, increasing survivability, enhancing safety, and improving combat effectiveness. The emphasis of the program is on non-developmental item/commercial off the shelf (NDI/COTS) available items which can be quickly evaluated and fielded. This program is coordinated with the Army's Soldier Enhancement Program (SEP).

Ammunition Life Cycle Management Program responsibility for Total Life Cycle Management for ground conventional munitions. Accordingly, PM Ammo is a member of the joint services Ammunition Logistics Research and Development IPT (ALR&D IPT). Each year the IPT solicits R&D projects from all of the services. The IPT looks for innovative ideas to enhance logistical support for munitions. Approximately 20 Ammo Logistics R&D projects are voted on each year by the IPT. They are prioritized by voting actions of the Senior Review Board and funding sources are identified. Since the funding for ammunition will likely decrease as the Marine Corps draws down and we end our participation in OEF, ammunition logistics R&D projects designed to extend the shelf life of our current inventory, provide enhanced packaging to protect our munitions, and other such projects will go a long way to ensure the Marine Corps can maintain a reliable conventional ammunition inventory into the future.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Marine Enhancement Program (MEP)	1.588	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments: Continued to use funds based on the mission and the nature of the MEP as an accelerated acquisition process. The future MEP candidate submissions/selections will determine the projects that will be funded.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Marine Expeditionary Rifle Squad (MERS)</p> <p align="right">Articles:</p>	3.726 -	1.753 -	2.441 -	0.000 -	2.441 -
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Continued to support all the Marine Corps Systems Command program offices that provide equipment to the Marine rifle squad or provide mobility platforms that support the squad. -Continued to resource and utilize the Gruntworks Squad Integration Facility as an asset to execute integration projects and usability trials. -Continued to conduct human performance trials utilizing MC-LEAP and other data collection methodologies. -Continued to conduct usability trials and limited user evaluations for hand held devices and digital interoperability at the infantry platoon and squad level. -Continued to support Modular Scalable Protection System and clothing projects with human factors expertise. -Continued to conduct experiments using the Marine Corps Load Effects Assessment Program. -Continued to conduct R&D on modeling and simulation to develop integrated seating solutions for combat equipped Marines for ACV 1.1, JLTV and other mobility programs and synchronize seat belt and retention systems among the platforms. -Continued to conduct R&D on squad systems in conjunction with Army squad system projects. -Continued to conduct surveys with post deploying infantry battalions on usability and integration of equipment utilized during deployment. -Continued to conduct human performance testing of Marines utilizing current and prototype configurations of infantry rifle squad equipment. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continued to evaluate and transition technologies from ONR and other S&T activities that enhance capabilities of the squad or provide a desired capability.</p> <p>-Continued to seek weight and volume reduction replacements for current infantry equipment that support integration of components.</p> <p>-Continued to implement requirements from MERS Initial Capabilities Document (ICD).</p> <p>FY 2016 Plans:</p> <p>-Continue to support all the Marine Corps Systems Command program offices that provide equipment to the Marine rifle squad or provide mobility platforms that support the squad.</p> <p>-Continue to resource, improve, and utilize the Gruntworks Squad Integration Facility as an asset to execute integration projects, prototyping, and usability trials.</p> <p>-Continue to conduct human performance trials utilizing MC-LEAP and other data collection methodologies in order to develop mobility metrics.</p> <p>-Continue to conduct usability trials, requirements generation workshops, and limited user evaluations for digital interoperability, handheld devices and applications at the infantry platoon and squad level.</p> <p>-Continue to support integration of body armor and load bearing systems with human factors expertise.</p> <p>-Continue to conduct mobility experiments using the Marine Corps Load Effects Assessment Program.</p> <p>-Continue to develop integrated seating solutions for combat equipped Marines for ACV 1.1, ACV 1.2, JLTV and other mobility programs and synchronize seat belt and retention systems among the platforms.</p> <p>-Continue to conduct R&D on squad systems in conjunction with Army squad system projects.</p> <p>-Continue to conduct surveys with post deploying infantry battalions on usability and integration of equipment utilized during deployment.</p> <p>-Continue to conduct human performance testing of Marines utilizing current and prototype configurations of infantry rifle squad equipment.</p> <p>-Continue to evaluate and transition technologies from ONR and other S&T activities that enhance capabilities of the squad or provide a desired capability.</p> <p>-Continue to seek weight and volume reduction replacements for current infantry equipment that support integration of components.</p> <p>-Continue to implement capability requirements from MERS Initial Capabilities Document (ICD).</p> <p>FY 2017 Base Plans:</p> <p>-Continue to support all the Marine Corps Systems Command program offices that provide equipment to the Marine rifle squad or provide mobility platforms that support the squad.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue to resource, improve, and utilize the Gruntworks Squad Integration Facility as an asset to execute integration projects, prototyping, and usability trials.</p> <p>-Continue to conduct human performance trials utilizing MC-LEAP and other data collection methodologies in order to develop mobility metrics.</p> <p>-Continue to conduct usability trials, requirements generation workshops, and limited user evaluations for digital interoperability, handheld devices and applications at the infantry platoon and squad level.</p> <p>-Continue to support integration of body armor and load bearing systems with human factors expertise.</p> <p>-Continue to conduct mobility experiments using the Marine Corps Load Effects Assessment Program.</p> <p>-Continue to develop integrated seating solutions for combat equipped Marines for ACV 1.1, ACV 1.2, JLTV and other mobility programs and synchronize seat belt and retention systems among the platforms.</p> <p>-Continue to conduct R&D on squad systems in conjunction with Army squad system projects.</p> <p>-Continue to conduct surveys with post deploying infantry battalions on usability and integration of equipment utilized during deployment.</p> <p>-Continue to conduct human performance testing of Marines utilizing current and prototype configurations of infantry rifle squad equipment.</p> <p>-Continue to evaluate and transition technologies from ONR and other S&T activities that enhance capabilities of the squad or provide a desired capability.</p> <p>-Continue to seek weight and volume reduction replacements for current infantry equipment that support integration of components.</p> <p>-Continue to implement capability requirements from MERS Initial Capabilities Document (ICD).</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Ammunition Life Cycle Management</p> <p align="right">Articles:</p>	0.463	0.500	0.319	0.000	0.319
<p>FY 2015 Accomplishments: -Initiated support for the Ammunition Logistics R&D IPT by funding the ExpressPak Pallet and Airbag/Load Retention Programs; two of the fifteen projects that have the most logistical impact to the Marine Corps.</p> <p>FY 2016 Plans: -Continue to support the Ammunition Logistics R&D IPT by funding the projects (TBD) that have the most logistical impact to the Marine Corps.</p> <p>FY 2017 Base Plans:</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue to support the Ammunition Logistics R&D IPT by funding the projects (TBD) that have the most logistical impact to the Marine Corps. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	5.777	2.253	2.760	0.000	2.760

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC BLI 2208: <i>Marine Enhancement Program</i>	1.306	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	22.145

Remarks

D. Acquisition Strategy

Non Developmental Item/Commercial off the Shelf (NDI/COTS).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys					Project (Number/Name) 2086 / Soldier/Marine Enhancement				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MERS Product Development	C/FFP	Various : Various	0.700	0.821	Mar 2015	1.100	Jan 2016	1.038	Feb 2017	-		1.038	0.000	3.659	-
MERS Product Development	C/FFP	Marine Corps : Quantico	0.000	0.000		0.000		0.150	May 2017	-		0.150	0.000	0.150	-
MEP Product Development	C/FFP	Marine Corps : Quantico, VA	5.454	1.388	Mar 2015	0.000		0.000		-		0.000	0.000	6.842	-
Prior Years Cumulative Funding	Various	Marine Corps Systems Command : Quantico, VA	4.429	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			10.583	2.209		1.100		1.188		-		1.188	-	-	-

Remarks
 Various contracts, MIPRS, Work Requests and Supply Requisitions are awarded through the year for the various initiatives in the MEP and MERS programs. Contract Method reflects where the majority of the funding is allocated. Contract award date reflects the first of multiple awards.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MERS Prior Year Cumulative Funding	Various	Marine Corps Systems Command : Quanico, VA	0.600	0.000		0.000		0.557	Dec 2016	-		0.557	0.000	1.157	-
MEP Operational Technical Support	WR	Various : Various	0.700	0.000		0.000		0.000		-		0.000	0.000	0.700	-
Ammunition Life Cycle Management	MIPR	Defense Ammo Ctr : McAlester, OK	0.000	0.229	Jan 2015	0.263	Jan 2016	0.168	Jan 2017	-		0.168	0.000	0.660	-
Ammunition Life Cycle Management	WR	NSWC : Indian Head, MD	0.000	0.234	Jan 2015	0.237	Jan 2016	0.151	Jan 2017	-		0.151	0.000	0.622	-
MERS Technical Support	WR	Various : Various	1.303	2.254	Jan 2015	0.400	Mar 2016	0.285	Jun 2017	-		0.285	0.000	4.242	-
Subtotal			2.603	2.717		0.900		1.161		-		1.161	0.000	7.381	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Various contracts, MIPRS, Work Requests and Supply Requisitions are awarded through the year for the various initiatives in the MERS programs. Contract method reflects where the majority of the funding is allocated. Contract award date reflects the first of multiple awards.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MERS Developmental Test & Eval	C/FFP	Marine Corps Systems Command : Quantico, VA	4.768	0.651	Mar 2015	0.253	Mar 2016	0.411	Feb 2017	-		0.411	Continuing	Continuing	Continuing
MEP Developmental Test & Eval	C/FFP	Marine Corps Systems Command : Quantico, VA	4.716	0.200	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			9.484	0.851		0.253		0.411		-		0.411	-	-	-

Remarks
Various contracts, MIPRS, Work Requests and Supply Requisitions are awarded through the year for the various initiatives in the MEP and MERS programs, therefore a specific contract award date cannot be identified. Contract award date reflects the first of multiple awards.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.670	5.777	2.253	2.760	-	2.760	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement
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Proj 2086	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
MERS Research/Int of Infantry Squad																												
Marine Enhancement Prog Equipment																												
ALCM Munitions RDTE Logistice																												
Empty grid for data entry																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2086 / Soldier/Marine Enhancement

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2086				
MERS research/integration of Infantry Squad - No major milestones	1	2015	4	2021
Marine Enhancement Program Equipment - No major milestones	1	2015	4	2021
ALCM - Munitions RDTE Logistics - No major milestones	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 2112 / Lightweight 155mm Howitzer			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2112: <i>Lightweight 155mm Howitzer</i>	0.193	1.987	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.180
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Lightweight 155mm Howitzer (LW155), also known as the M777A2, provides direct, reinforcing, and general support fires to maneuver forces. It replaces all howitzers in all missions in the USMC and replaces the M198 howitzer as the general support artillery for light forces in the Army. The LW155 fires unassisted projectiles to a range of 15 miles and assisted projectiles to 19 miles. The addition of the digital fire control system enables the weapon to program and fire the improved Excalibur precision-guided munition to ranges in excess of 25 miles with better than 10-meter Circular Error Probable (CEP) accuracy. The LW155 is the first ground combat system whose major structures are made of high strength titanium alloy and the system makes extensive use of hydraulics to operate the breech, load tray, recoil and wheel arms. The combination of titanium structures and the use of hydraulic systems resulted in a significant weight savings over the M198 system (7000 lbs.). Compared to the M198, the LW155 emplaces three-times faster and displaces four-times faster. It traverses 32 percent more terrain worldwide and is 70 percent more survivable than the M198. The LW155 was first introduced into the Marine Corps in April 2005 and since then 10th, 11th, 12th and 14th Marines and the schoolhouses have been fielded. The Army has fielded the system to its Stryker Brigades and Fires Brigades and is currently fielding to its Infantry Brigades. The LW155 is currently in OEF with both Services.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: ECP Material Solutions	1.987	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Continued to support engineering analysis such as Digital Fire Control System component upgrades as well as concepts to increase M777A2 range and future power technology solutions.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.987	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2112 / Lightweight 155mm Howitzer

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	Total Cost
			Base	OCO	Total					Complete	
• 218500: PMC - LW155	4.487	7.177	3.318	-	3.318	0.476	0.208	0.068	0.068	0.000	1,333.471

Remarks

D. Acquisition Strategy

Production and fielding of the LW155 has concluded and the program has entered into the Sustainment Life Cycle Phase. The program will continue to perform research and development to remedy obsolescence issues, diminishing manufacturing sources, technical issues and emergent threats.

E. Performance Metrics

N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2112 / Lightweight 155mm Howitzer
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Proj 2112	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021						
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q			
Weapons Engineering Study																															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2112 / Lightweight 155mm Howitzer

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2112				
Weapons Engineering Study	1	2015	1	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 2237 / Amphibious Vehicle Test			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2237: Amphibious Vehicle Test	4.843	2.075	0.994	0.991	-	0.991	0.979	0.903	0.921	0.942	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Amphibious Vehicle Test Branch (AVTB) is a component of Marine Corps Systems Command (MCSC) and is the Department of Defense's only certified amphibious vehicle test capability. The AVTB plans, executes, analyzes and reports results of developmental and integrated test and evaluation events, predominately supporting the development and performance validation of amphibious and ground combat vehicle system capabilities. The AVTB conducts or supports testing for the MCSC; Navy PEOs and Program Management Offices; the Office of Naval Research; and HQMC PP&O and CD&I, as directed. The AVTB mission is to plan, execute, analyze and report developmental and integrated test and evaluation of USMC and Joint Service tracked, wheeled and ground combat vehicles and other demonstration events in order to characterize the performance of amphibious and ground combat vehicle systems and enable informed acquisition decisions for the future warfighting capabilities.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Contracts and Test and Evaluation Support Assets	2.075	0.994	0.991	0.000	0.991
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued high water speed testing of the Hydrodynamic Test Rig (HTR) to support the Amphibious Combat Vehicle (ACV) design development and technology risk reduction efforts.					
-Continued Light Armored Vehicle (LAV) variant water testing; AAV baseline and track with focused testing to inform the upgrade acquisition and contracting process for survivability upgrade.					
-Continued to provide resources and technical expertise to ONR's Exercise Trident Warrior.					
-Continued test support to other MCSC, Navy PEO and PM requirements such as PM GBAD and PM MC3.					
-Initiated Joint Service acquisitions support, such as the United States Special Operations Command, including multiple ground mobility systems, maritime systems and target engagement systems.					
FY 2016 Plans:					
-Continue HTR testing					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2237 / Amphibious Vehicle Test

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue ACV inc 1.1 Reliability Growth Testing (RGT), Survivability, Human Factors, C2, Water mode Operational Assessments, and support the ACV design development and technology risk reduction efforts.					
-Continue LAV variant water testing.					
-Continue AAV baseline and survivability upgrade DT&E RGT with increase focus testing to inform the upgrade acquisition and contracting process for survivability upgrade.					
-Continue to provide resources and technical expertise to ONR's Exercise Trident Warrior; and provide test support to other MCSC, Navy PEOs, and Joint Service acquisitions.					
<i>FY 2017 Base Plans:</i>					
-Continue ACV inc 1.1 DT&E water testing					
-Continue LAV variant water testing.					
-Continue AAV baseline and survivability upgrade DT&E RGT with increase focus testing to inform the upgrade acquisition and contracting process for survivability upgrade.					
-Continue to provide resources and technical expertise to ONR's Exercise Trident Warrior; and provide test support to other MCSC, Navy PEOs, and Joint Service acquisitions.					
<i>FY 2017 OCO Plans:</i>					
N/A					
Accomplishments/Planned Programs Subtotals	2.075	0.994	0.991	0.000	0.991

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
Work will be led in-house by the Amphibious Vehicle Test Branch (AVTB). As DoD's only certified amphibious test and evaluation capability, AVTB will provide technical and user information regarding the performance of amphibious and ground combat vehicles during developmental testing, capabilities demonstrations and assessments,

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2237 / Amphibious Vehicle Test

integrated and follow-on test evaluations events for Marine Corps and Joint Service Program Managers of system activities to support future warfighting capabilities. Required DT&E test assets will be resourced organically with military and civilian personnel, and as required contracted by the MCSC, such as boat operations and maintenance, professional data collection and reduction, test instrumentation and test-peculiar programming and technical writing.

E. Performance Metrics

N/A

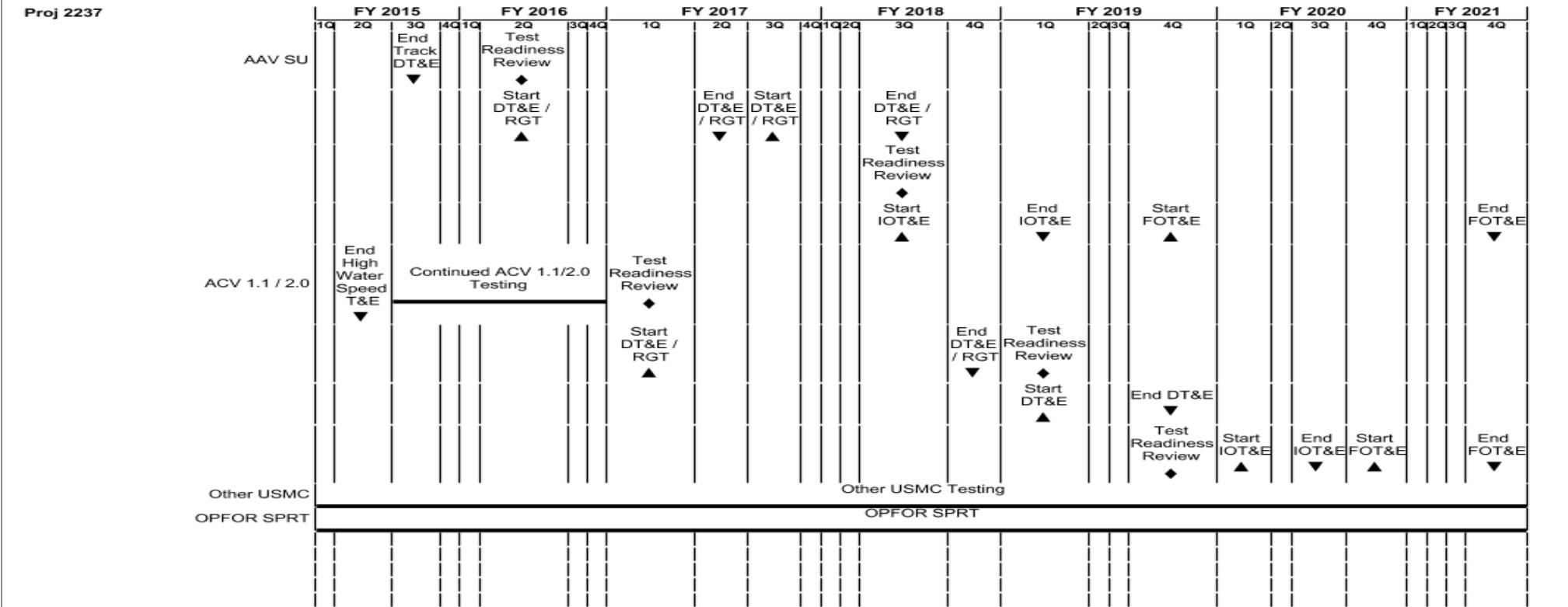
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206623M / MC Ground Cmbt Spt Arms Sys				2237 / Amphibious Vehicle Test							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Facility/Test Infrastructure	C/FFP	NAVFAC, SW : Camp Pendleton, CA	0.240	0.061	Apr 2015	0.065	May 2016	0.080	May 2017	-		0.080	Continuing	Continuing	Continuing
Test Assets/Boat Operators	C/FFP	RCO Camp Pend : Camp Pendleton	2.400	0.850	Aug 2015	0.133	Aug 2016	0.082	Aug 2017	-		0.082	0.000	3.465	-
Data Collections	WR	ATC : Camp Pendleton, CA	0.256	0.498	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Hazmat POL PPE	Various	Camp Pendleton : Camp Pendleton CA	0.060	0.050	Jul 2015	0.030	Jul 2016	0.040	Jul 2017	-		0.040	0.000	0.180	-
Subtotal			2.956	1.459		0.228		0.202		-		0.202	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Article Ops& Maint/ Fuel Consumables and Materials	Various	AVTB : Camp Pendelton, CA	0.943	0.095	Jun 2015	0.056	Jun 2016	0.060	Jul 2017	-		0.060	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	WR	AVTB : Camp Pendleton	0.020	0.000		0.000		0.000		-		0.000	0.000	0.020	-
Subtotal			0.963	0.095		0.056		0.060		-		0.060	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Data Management	C/FFP	MCSC : Quantico, VA	0.924	0.521	Jun 2015	0.710	Jun 2016	0.729	Jun 2017	-		0.729	Continuing	Continuing	Continuing
Subtotal			0.924	0.521		0.710		0.729		-		0.729	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2237 / Amphibious Vehicle Test
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2237 / Amphibious Vehicle Test

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2237				
AAV SU: FY15 End Track DT&E	3	2015	3	2015
AAV SU: FY16 Test Readiness Review	2	2016	2	2016
AAV SU: FY16 Start DT&E / RGT	2	2016	2	2016
AAV SU: FY17 End DT&E / RGT	2	2017	2	2017
AAV SU: FY17 Start DT&E / RGT	3	2017	3	2017
AAV SU: FY18 End DT&E / RGT	3	2018	3	2018
AAV SU: FY18 Test Readiness Review	3	2018	3	2018
AAV SU: FY18 Start IOT&E	3	2018	3	2018
AAV SU: FY19 End IOT&E	1	2019	1	2019
AAV SU: FY19 Start FOT&E	4	2019	4	2019
AAV SU: FY20 End FOT&E	4	2021	4	2021
ACV 1.1 / 2.0: FY15 End High Water Speed T&E	2	2015	2	2015
ACV 1.1 / 2.0: Continued ACV Testing	3	2015	4	2016
ACV 1.1 / 2.0: FY17 Test Readiness Review	1	2017	1	2017
ACV 1.1 / 2.0: FY17 Start DT&E / RGT	1	2017	1	2017
ACV 1.1 / 2.0: FY18 End DT&E / RGT	4	2018	4	2018
ACV 1.1 / 2.0: FY19 (1) Test Readiness Review	1	2019	1	2019
ACV 1.1 / 2.0: FY19 Start DT&E	1	2019	1	2019
ACV 1.1 / 2.0: FY20 End DT&E	4	2019	4	2019
ACV 1.1 / 2.0: FY19 (2) Test Readiness Review	4	2019	4	2019
ACV 1.1 / 2.0: FY20 Start IOT&E	1	2020	1	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2237 / Amphibious Vehicle Test
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ACV 1.1 / 2.0: FY20 End IOT&E	3	2020	3	2020
ACV 1.1 / 2.0: FY20 Start FOT&E	4	2020	4	2020
ACV 1.1 / 2.0: FY21 End FOT&E	4	2021	4	2021
Other USMC: Other USMC Testing	1	2015	4	2021
OPFOR SPRT: OPFOR SPRT	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 2315 / Training Devices/Simulators			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2315: Training Devices/Simulators	112.370	5.668	12.101	13.605	-	13.605	14.791	14.014	13.856	14.161	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$0.150 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

(U) Training simulators supported by this program element include Combined Arms Command & Control Training Upgrade System (CACCTUS), Deployable Virtual Training Environment (DVTE), Marine Air/Ground Task Force (MAGTF) Tactical Warfare Simulation (MTWS) Enhancements, Ranges and Training Area Management (RTAM) [Formerly Range Modernization/Transformation], Squad Immersive Training Environment (SITE) and Training Support. These training systems provide tactical weapons and decision-making skill training from entry level through MAGTF staff level. Systems will be interoperable and will allow for mission planning, mission rehearsal and concept evaluation in a valid synthetic environment with objective and timely feedback. Through live, virtual and constructive simulation, the Marine Corps will have the means to train jointly, educate, develop doctrine and tactics, formulate and assess operational plans, assess warfighting situations, and define operational requirements.

The \$.973M decrease from FY16 to FY 17 reflects re-phasing of funds to better align with the Training Devices/Simulators program schedule.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Combined Arms Command and Control Trainer Upgrade System (CACCTUS)	0.199	6.993	6.603	0.000	6.603
Articles:	-	-	-	-	-
Description: CACCTUS is a combined arms staff training system that when fully fielded will enable comprehensive Marine Corps staff, unit, and team training both at home station Combined Arms Staff Training (CAST) facilities and through distributed training involving CAST facilities across the Marine Corps. CACCTUS is an upgrade to the USMC's CAST that provides fire support training for the Marine Air Ground Task Force (MAGTF) elements up to and including Marine Expeditionary Brigade (MEB) level. Using the system components and simulation capabilities, two dimensional (2D) and three dimensional (3D) visuals, interfaced Command, Control, Communications, Computers and Intelligence (C4I), synthetic terrain, and an After Action Review (AAR), the concept of operations for the CACCTUS system is to immerse the trainees in a realistic, scenario-driven environment to enable commands and their battle staffs to train or rehearse combined arms tactics, techniques and procedures for decision-making processes.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i></p> <ul style="list-style-type: none"> - Continued Acquisition Program Engineering support. <p><i>FY 2016 Plans:</i></p> <ul style="list-style-type: none"> - Continue Acquisition Program Engineering support. - Continue development of Distributed Ops and Virtualization. - Continue development of Live, Virtual and Constructive (LVC) training capabilities. - Continue development of warfare specific software applications in support of Battalion Regimental staffs to Marine Expeditionary Brigade (MEB) training requirements. - Continue development of After Action Review (AAR) functionality. - Continue development of new architecture to support maturing hardware platforms. - Initiate additional training system interoperability to include aviation. - Initiate prototype development for shipboard training. <p><i>FY 2017 Base Plans:</i></p> <ul style="list-style-type: none"> - Continue Acquisition Program Engineering support. - Continue development of Distributed Ops and Virtualization. - Continue development of Live, Virtual and Constructive (LVC) training capabilities. - Continue development of warfare specific software applications in support of Battalion Regimental staffs to Marine Expeditionary Brigade (MEB) training requirements. - Continue additional training system interoperability to include aviation. - Continue prototype development for shipboard training. - Complete development of After Action Review (AAR) functionality. - Complete development of new architecture to support maturing hardware platforms. <p><i>FY 2017 OCO Plans:</i> N/A</p>					
<p><i>Title:</i> Deployable Virtual Training Environment (DVTE)</p> <p align="right"><i>Articles:</i></p> <p><i>Description:</i> DVTE is a laptop Personal Computer (PC) based simulation system capable of emulating organic and supporting Infantry Battalion weapons systems and training scenarios to facilitate training and readiness based training. Its portable configuration allows Marines to train in areas where there are few options for training in garrison, aboard ship, at remote reserve locations, and deployed. DVTE training includes language and</p>	0.544	0.573	1.696	0.000	1.696
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>culture training, platoon and squad level tactics, employment of supporting arms, and various Recognition of Combatants (ROC) packages. DVTE is part of a Commander's "training toolkit" contributing to the building block approach to standards based training focusing on achieving an improved level of combat readiness.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued incremental DVTE network infrastructure development by focusing on capabilities identified as DVTE application enhancements in the development plan. - Continued the additional efforts specified under the DVTE Software Capability Development Document (CDD) Increment II for Virtual Battlespace (VBS) release that includes improved Call For Fire (CFF) and Close Air Support (CAS) capability to replace/decrease actual live training events. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue incremental DVTE network infrastructure development by focusing on capabilities identified as DVTE application enhancements in the development plan. - Continue the additional efforts specified under the DVTE Software Capability Development Document (CDD) Increment II for Virtual Battlespace (VBS) release that includes improved Call For Fire (CFF) and Close Air Support (CAS) capability to replace/decrease actual live training events. - Initiate development of Tactical Air Control Party Green Gear modeling and Digital Fire Control System (DFCS) modeling for the Virtual Battlespace (VBS) release. - Initiate action to improve Flight Dynamics of Close Air Support (CAS) weapon platforms to more accurately represent live Joint Terminal Attack Controller (JTAC) training for the Virtual Battlespace (VBS) release. - Initiate enhancement and integration of Comm Gear and After Action Review (AAR) for the Virtual Battlespace (VBS) release. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue incremental DVTE network infrastructure development by focusing on capabilities identified as DVTE application enhancements in the development plan. - Continue the additional efforts specified under the DVTE Software Capability Development Document (CDD) Increment II for Virtual Battlespace (VBS) release that includes improved Call For Fire (CFF) and Close Air Support (CAS) capability to replace/decrease actual live training events. - Continue development of Tactical Air Control Party Green Gear modeling and Digital Fire Control System (DFCS) modeling for the Virtual Battlespace (VBS) release. - Continue to improve Flight Dynamics of Close Air Support (CAS) weapon platforms to more accurately represent live Joint Terminal Attack Controller (JTAC) training for the Virtual Battlespace (VBS) release. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>- Continue enhancement and integration of Comm Gear and After Action Review (AAR) for the Virtual Battlespace (VBS) release.</p> <p>FY 2017 OCO Plans: N/A</p>					
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<p>Title: Marine Air/Ground Task Force (MAGTF) Tactical Warfare Simulation (MTWS) Enhancements</p> <p align="right">Articles:</p>	1.341	2.086	2.533	0.000	2.533
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Description: MTWS is the only Marine Corps aggregate-level constructive simulation system designed to support the training of Senior Commanders and their staffs in command and control processes and procedures. The system provides interactive, multi-sided, force-on-force, real-time modeling and simulation with stand-alone tactical combat scenarios for air ground, surface, and amphibious operations that interfaces to fielded Marine Corps Command, Control, Communications Computers and Intelligence (C4I) systems such as Command and Control Personal Computer (C2PC) and Intelligence Operations Server (IOS). MTWS provides the battle staff the ability to seamlessly train with and use other C4I systems during the execution on an MTWS supported training event. Through the implementation of a High Level Architecture (HLA) interface between MTWS and the entity-level Joint Conflict and Tactical Simulation (JCATS) system, high resolution tactical objectives can be simulated in JCATS and reflected within the context of a larger operation scenario conducted in MTWS.

FY 2015 Accomplishments:

- Continued interoperability development of MTWS integration into Joint Live Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings.
- Continued development to increase levels of software capability to meet the changing operational environment that Marines fight in daily.
- Continued server virtualization testing.
- Completed design/development and test of a detailed unified architecture in support U.S. Korea Command (KORCOM) interoperability.

FY 2016 Plans:

- Continue interoperability development of MTWS integration into Joint Live Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings.
- Continue development to increase levels of software capability to meet the changing operational environment that Marines fight in daily.
- Complete server virtualization testing.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Initiate Live, Virtual and Constructive (LVC) simulation integration. FY 2017 Base Plans: - Continue interoperability development of MTWS integration into Joint Live Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings. - Continue development to increase levels of software capability to meet the changing operational environment that Marines fight in daily. - Continue Live, Virtual and Constructive (LVC) simulation integration. FY 2017 OCO Plans: N/A					
Title: Ranges and Training Area Management (RTAM) [formerly Range Modernization/Transformation (RM/T)] Articles:	0.000	0.982	0.783	0.000	0.783
Description: Ranges and Training Area Management (RTAM) developments are associated with modernizing live training ranges at major USMC bases and stations. This development effort enhances After Action Review (AAR) with ground truth feedback, realistic representation of Opposing Forces (OPFOR), and will upgrade the range and exercise control capabilities. RM/T integrates Live, Virtual, and Constructive training technologies, thereby, enhancing fielded live-fire, force-on-target, and force-on-force training capabilities. FY 2015 Accomplishments: N/A FY 2016 Plans: - Continue to perform minimum software upgrades to add capability to the Range Instrumentation Systems Exercise Controller (RISCon) through the integration of numerous live/target systems. FY 2017 Base Plans: - Continue to perform minimum software upgrades to add capability to the Range Instrumentation Systems Exercise Controller (RISCon) through the integration of numerous live/target systems. FY 2017 OCO Plans: N/A	-	-	-	-	-
Title: Supporting Arms Virtual Trainer (SAVT) Articles:	0.828	0.000	0.000	0.000	0.000
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: The SAVT will advance the training capability, operational readiness, and tactical proficiency of USMC Joint Terminal Attack Controllers (JTACS), Forward Observers (FOs), and Forward Air Controllers (FACs). The personnel will use training scenarios that require the placement of tactical ordnance on selected targets using Joint Close Air Support (JCAS) procedures and observed fire procedures for Naval Surface Fire Support (NSFS), artillery and mortar fire to perform destruction, neutralization, suppression, illumination/coordinated illumination, interdiction and harassment fire missions.</p> <p>FY 2015 Accomplishments: - Initiated and completed software development, integration, testing, and delivery of simulated bomb damage assessment, aircraft flight behaviors, and Joint Simulated Automated Forces (JSAF) functionality to meet the DoD mandate for migration to Windows 7 OS and to meet the DoD objective of improving accreditation via simulation for Joint Close Air Support (JCAS) procedures.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Squad Immersive Training Environment (SITE)</p> <p align="right">Articles:</p> <p>Description: SITE is an integrating construct or "toolkit" of Live, Virtual and Constructive (LVC) training capabilities used to significantly improve infantry squad operational readiness and squad leader tactical decision-making skills. The collection of LVC training capabilities within SITE will enhance opportunities for squad collective training to increase tactical proficiency, confidence, and readiness for real world operations. SITE will enhance skill transfer and assessment by enabling squads to finish, test, and remediate training in preparation for a capstone exercise such as pre-deployment training.</p> <p>FY 2015 Accomplishments:</p>	2.705	1.426	1.952	0.000	1.952
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Continued to produce additional documentation associated with product development to include (1) Systems Design Specification; (2) Interface Design Document; and (3) an overarching System Engineering Master Plan (SEMP) crossing current training systems to steer development of standards and a roadmap for system capability upgrades and sustained interoperability.</p> <p>- Completed immersive training capabilities with existing programs of record systems and develop capability upgrades to include integration of Instrumented-Tactical Engagement Simulation System II (I-TESS II) enhancements with Range Instrumentation Systems Exercise Controller (RISCon).</p> <p>- Initiated Training Effectiveness Evaluation events for system enhancements for I-TESS II Shoulder-Launched Multipurpose Assault Weapon (SMAW) and Javelin weapons, and One Tactical Engagement Simulation System (OneTESS) with RISCon.</p> <p>- Initiated transition of Office of Naval Research (ONR) project Perceptual Training System & Tools (PercepTs) and complete Augmented Immersive Team Training (AITT) products and deliverables.</p> <p>- Initiated development efforts for the anti-armor TOW/Saber and MK19 simulated weapons systems capability.</p> <p>FY 2016 Plans:</p> <p>- Continue to produce additional documentation associated with product development to include (1) Systems Design Specification; (2) Interface Design Document; and (3) an overarching System Engineering Master Plan (SEMP) crossing current training systems to steer development of standards and a roadmap for system capability upgrades and sustained interoperability.</p> <p>- Complete Training Effectiveness Evaluation events for system enhancements for Instrumented-Tactical Engagement Simulation System II (I-TESS II) Shoulder-Launched Multipurpose Assault Weapon (SMAW) and Javelin weapons, and One Tactical Engagement Simulation System (OneTESS) with Range Instrumentation Systems Exercise Controller (RISCon).</p> <p>- Complete transition of Office of Naval Research (ONR) project Perceptual Training System & Tools (PercepTs) product and deliverable to PM TRASYs.</p> <p>- Complete development efforts for the anti-armor TOW/Saber and MK19 simulated weapons systems capability.</p> <p>- Initiate integration of Augmented Immersive Team Training (AITT) system upon completion of transition from ONR into existing programs of record.</p> <p>- Initiate System Training Effectiveness Evaluation Event for Tube-launched Optically-tracked Wire-guided (TOW)/Saber and MK19 capability.</p> <p>FY 2017 Base Plans:</p> <p>- Continue to produce additional documentation associated with product development to include (1) Systems Design Specification; (2) Interface Design Document; and (3) an overarching System Engineering Master</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Plan (SEMP) crossing current training systems to steer development of standards and a roadmap for system capability upgrades and sustained interoperability.</p> <ul style="list-style-type: none"> - Complete integration of Augmented Immersive Team Training (AITT) system upon completion of transition from ONR into existing programs of record. - Complete System Training Effectiveness Evaluation Event for TOW/Saber and MK19 capability. - Initiate development of the Employ Munitions capability within I-TESS II. - Initiate the training effectiveness evaluation of the Employ Munitions development. - Initiate the integration of the Augmented Immersive Team Trainer within the OneTESS Mortar capability and produce the prototype items for testing. - Initiate the Live and Virtual integration activities for I-TESS II with Virtual Battle Space (VBS). <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Training Support</p> <p align="right">Articles:</p> <p>Description: Provide training solution development efforts for the modernization of training systems by providing high fidelity, immersive simulations and capabilities. Integrates existing live, virtual, and constructive training capabilities to provide fully coordinated Marine Air Ground Training Force (MAGTF) training exercises that realistically simulate the operating environment.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued interoperability development of MAGTF Tactical Warfare Simulation (MTWS) integration to Joint Live, Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings. - Continued server virtualization testing. - Initiated and completed design/development and test of a detailed unified architecture in support U.S. Korea Command (KORCOM) interoperability and amphibious landings for MTWS. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue interoperability development of MAGTF Tactical Warfare Simulation (MTWS) integration to Joint Live, Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings. - Complete server virtualization testing. - Initiate Live, Virtual and Constructive (LVC) simulation integration. <p>FY 2017 Base Plans:</p>	0.051	0.041	0.038	0.000	0.038
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue interoperability development of MAGTF Tactical Warfare Simulation (MTWS) integration to Joint Live, Virtual and Constructive (JLVC) Federation, with primary focus on amphibious landings. - Continue Live, Virtual and Constructive (LVC) simulation integration.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	5.668	12.101	13.605	0.000	13.605

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/6532-01: <i>Training Devices, CACCTUS</i>	0.447	2.601	3.515	-	3.515	4.290	3.909	3.990	4.067	Continuing	Continuing
• PMC/6532-02: <i>Training Devices, RTAM</i>	4.739	11.869	14.766	-	14.766	13.168	18.180	12.904	15.461	Continuing	Continuing
• PMC/4630: <i>Common Computer Resources, MTWS</i>	0.541	0.718	0.724	-	0.724	0.738	0.752	0.765	0.779	Continuing	Continuing
• PMC/6532-03: <i>Training Devices, SAVT</i>	0.000	0.000	4.061	-	4.061	4.070	0.000	0.000	0.000	0.000	8.131
• PMC/6532-04: <i>Training Devices, DVTE</i>	0.000	0.000	2.229	-	2.229	2.271	1.447	1.476	1.505	Continuing	Continuing
• PMC/6532-05: <i>Training Devices, SITE</i>	0.000	0.000	0.000	-	0.000	25.012	0.000	0.000	0.000	0.000	25.012

Remarks

D. Acquisition Strategy
 (U) CACCTUS - MIPR to Army & Work Request to Navy-NAWCTSD for reimbursable Engineering support; Exercise task order on new Competitive contract (C/IDIQ).
 (U) DVTE - Exercise task orders off of new sole source IDIQ for Virtual Battleship Space (VBS) Software (SW) Development.
 (U) MTWS - Extended existing contract 9 months in order to continue activities in support of federate status with the Joint Live Virtual Constructive (JLVC) federation v.8, and complete in-process enhancements for Ulchi Freedom Guardian-15 (UFG-15); Exercise task order on new competitive contract(C/IDIQ).
 (U) RTAM - MIPR to the Army-PEO STRI planned for award on existing Consolidated Product-line Management Contract; and send Work Request to NAWC-TSD for reimbursable support.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0206623M / MC Ground Cmbt Spt Arms Sys	2315 / Training Devices/Simulators

(U) SITE - MIPR to the Army-PEO STRI planned for award on existing Consolidated Product-line Management Contract; and exercise option on existing MCSC RDTE contract M67854-13-C-7802 (C/FFP).

(U) SAVT - Leveraging an NAWC-TSD existing C/FFP contract for engineering support.

(U) Training Support - Extended existing contract 9 months in order to continue activities in support of federate status with the Joint Live Virtual Constructive (JLVC) federation v.8, and complete in-process enhancements for Ulchi Freedom Guardian-15 (UFG-15); Exercise task order on new competitive contract (C/IDIQ).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CACCTUS - SW Dev Task 1	C/IDIQ	Riptide Software, Inc. : Oviedo, FL	0.363	0.000		4.655	Dec 2015	2.897	Nov 2016	-		2.897	Continuing	Continuing	Continuing
CACCTUS - SW Dev Task 2	C/IDIQ	Riptide Software, Inc. : Oviedo, FL	0.000	0.000		1.090	Mar 2016	1.162	Mar 2017	-		1.162	Continuing	Continuing	Continuing
CACCTUS - SW Dev Task 3	C/IDIQ	Riptide Software, Inc. : Oviedo, FL	0.000	0.000		0.929	Jul 2016	2.341	Jul 2017	-		2.341	Continuing	Continuing	Continuing
DVTE - SW Dev - VBS	SS/IDIQ	Bohemia Interactive : Orlando, FL	12.711	0.544	Jul 2015	0.573	Mar 2016	1.696	Mar 2017	-		1.696	Continuing	Continuing	Continuing
SITE - Combat Vehicle Upgrades	C/FFP	Cubic Defense : San Diego, CA	0.000	0.000		0.400	Jan 2016	0.000		-		0.000	0.000	0.400	-
MTWS - SW Dev Extension	SS/FFP	Cole Engineering Services Inc. : Orlando, FL	0.000	1.341	Mar 2015	0.000		0.000		-		0.000	0.000	1.341	-
MTWS - SW Dev Task 1	C/IDIQ	Cole Engineering Services Inc. : Orlando, FL	0.415	0.000		1.986	Jan 2016	2.433	Jan 2017	-		2.433	Continuing	Continuing	Continuing
MTWS - SW Dev Task 2	C/IDIQ	Cole Engineering Services Inc. : Orlando, FL	0.000	0.000		0.100	May 2016	0.100	May 2017	-		0.100	Continuing	Continuing	Continuing
Training Support - MTWS - SW Dev Task 1	SS/FFP	Cole Engineering Services Inc. : Orlando, FL	0.000	0.051	Mar 2015	0.000		0.000		-		0.000	0.000	0.051	-
Training Support - MTWS - SW Dev Task 2	C/IDIQ	Cole Engineering Services Inc. : Orlando, FL	0.002	0.000		0.041	Jan 2016	0.038	Jan 2017	-		0.038	Continuing	Continuing	Continuing
RTAM RISCon Development	MIPR	PEOSTRI/TRADE : Orlando, FL	7.028	0.000		0.618	Nov 2015	0.419	Dec 2016	-		0.419	Continuing	Continuing	Continuing
SAVT - SW Dev	C/FFP	NAWC/Alion Science and Technology Corp : Burr Ridge, IL	0.000	0.470	Apr 2015	0.000		0.000		-		0.000	0.000	0.470	-
SITE - Live Core System Upgrades	C/FFP	Cubic Defense : San Diego, CA	1.383	1.939	Jan 2015	0.241	Dec 2015	1.467	Dec 2016	-		1.467	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SITE - Consolidated Product Line Dev	MIPR	PEOSTRI/TRADE : Orlando, FL	0.864	0.162	Jul 2015	0.770	Dec 2015	0.470	Dec 2016	-		0.470	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	Not Specified : Not Specified	71.474	0.000		0.000		0.000		-		0.000	0.000	71.474	-
Subtotal			94.240	4.507		11.403		13.023		-		13.023	-	-	-

Remarks

- CACCTUS - SW Dev - The New Competitive contract awarded 4th quarter FY15, with 1st FY16 Development Task Order awarded in 1st quarter 2016.
- MTWS - SW Dev - New Competitive contract awarded in 1st quarter FY16, with 1st FY16 Development Task Order to award 2nd quarter FY16.
- Training Support - SW Dev - New Competitive contract awarded in 1st quarter FY16, with 1st FY16 Development Task Order to award 2nd quarter FY16.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CACCTUS - Govt Eng Support	MIPR	Night Vision & Electronic Sensors Directorate : Ft Belvoir, VA	0.000	0.000		0.119	Mar 2016	0.000		-		0.000	0.000	0.119	-
CACCTUS - SW Dev Support	WR	NAWCTSD : Orlando, FL	2.468	0.199	Oct 2014	0.200	Oct 2015	0.203	Oct 2016	-		0.203	Continuing	Continuing	Continuing
RTAM - SW Dev Support	WR	NAWCTSD : Orlando, FL	0.802	0.000		0.364	Oct 2015	0.364	Oct 2016	-		0.364	Continuing	Continuing	Continuing
SITE - SW Dev Support	WR	NAWCTSD : Orlando, FL	0.129	0.383	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SITE - Navy Support	WR	NSWC Corona : Corona, CA	0.000	0.202	Jun 2015	0.000		0.000		-		0.000	0.000	0.202	-
SITE - Travel	Various	DTS : Various	0.023	0.000		0.015	Dec 2015	0.015	Dec 2016	-		0.015	0.000	0.053	-
SITE-Laser Hazard Evaluation	WR	NSWC Dahlgren : Dahlgren, VA	0.000	0.019	Feb 2015	0.000		0.000		-		0.000	0.000	0.019	-
SAVT - SW Installation	C/FFP	TJ, Inc. : Orlando, FL	0.000	0.205	Mar 2015	0.000		0.000		-		0.000	0.000	0.205	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Combined Arms Command & Control Training Upgrade System (CACCTUS)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Program Contractor Support	-----																															
Govt Engineering Support	-----																															
Software Development Reviews	-----																															
Development Contract Awards					◆	◆			◆	◆	◆		◆	◆	◆		◆	◆	◆		◆	◆	◆		◆	◆	◆		◆	◆	◆	
Annual SW Release						◆				◆				◆				◆				◆				◆				◆		
Test and Validation, All Sites	-----																															
Mid Year Release											◆																					
Full Operating Capability (FOC) Combined																																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Deployable Virtual Training Environment (DVTE)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Software Development - Contract Award				◆		◆				◆				◆				◆				◆				◆		
Software Development Version Release - VBS				◆				◆				◆				◆				◆				◆				◆

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Marine Air/Ground Task Force (MAGTF) Tactical Warfare Simulation (MTWS)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
MTWS IPT/CCB	◆			◆																												
Contract Award	◆					◆	◆			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆			◆	◆	
Version 3.5.1 SW																																
SW Release	◆																															
Version 3.5.2 SW																																
User Acceptance Testing		◆																														
SW Release			◆																													
Version 3.5.3 SW																																
User Acceptance Testing				◆																												
SW Release					◆																											
Version 3.5.5 SW																																
User Acceptance Testing								◆																								
SW Release										◆																						
Version 3.5.7 SW																																
User Acceptance Testing												◆																				
SW Release													◆																			
Version 3.5.9 SW																																
User Acceptance Testing																◆																
SW Release																	◆															
Version 3.5.11 SW																																
User Acceptance Testing																				◆												
SW Release																					◆											
Version 3.5.13 SW																																
User Acceptance Testing																								◆								
SW Release																									◆							
Version 3.5.15 SW																																
User Acceptance Testing																																◆

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Ranges and Training Area Management	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
RISCon Development					◆																							
Contract Award					◆				◆				◆				◆				◆				◆			
Systems Integration																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Squad Immersive Training Environment (SITE)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Virtual System Upgrade Deliverables																												
Live Core System Upgrades Contract Awards		◆				◆				◆				◆				◆				◆				◆		
Consolidated Product Line Development Awards				◆		◆				◆				◆				◆				◆				◆		

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Training Support	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Annual Software Release	◆		◆		◆				◆				◆				◆				◆				◆							
Contract Awards		◆				◆				◆				◆				◆				◆				◆						

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Supporting Arms Virtual Trainer (SAVT)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
SW Development and Install		◆	◆																									
Eng Lab Support				◆																								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Combined Arms Command & Control Training Upgrade System (CACCTUS)				
Program Contractor Support: Program Contractor Support	1	2015	4	2021
Govt Engineering Support: Govt Engineering Support	1	2015	4	2021
Software Development Reviews: Software Development Reviews	1	2015	4	2021
Development Contract Awards: FY16 Award 1	1	2016	1	2016
Development Contract Awards: FY16 Award 2	2	2016	2	2016
Development Contract Awards: FY16 Award 3	4	2016	4	2016
Development Contract Awards: FY17 Award 1	1	2017	1	2017
Development Contract Awards: FY17 Award 2	2	2017	2	2017
Development Contract Awards: FY17 Award 3	4	2017	4	2017
Development Contract Awards: FY18 Award 1	1	2018	1	2018
Development Contract Awards: FY18 Award 2	2	2018	2	2018
Development Contract Awards: FY18 Award 3	4	2018	4	2018
Development Contract Awards: FY19 Award 1	1	2019	1	2019
Development Contract Awards: FY19 Award 2	2	2019	2	2019
Development Contract Awards: FY19 Award 3	4	2019	4	2019
Development Contract Awards: FY20 Award 1	1	2020	1	2020
Development Contract Awards: FY20 Award 2	2	2020	2	2020
Development Contract Awards: FY20 Award 3	4	2020	4	2020
Development Contract Awards: FY21 Award 1	1	2021	1	2021
Development Contract Awards: FY21 Award 2	2	2021	2	2021
Development Contract Awards: FY21 Award 3	4	2021	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2315 / Training Devices/Simulators
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Annual SW Release: Annual SW Release 2016	2	2016	2	2016
Annual SW Release: Annual SW Release 2017	2	2017	2	2017
Annual SW Release: Annual SW Release 2018	2	2018	2	2018
Annual SW Release: Annual SW Release 2019	2	2019	2	2019
Annual SW Release: Annual SW Release 2020	2	2020	2	2020
Annual SW Release: Annual SW Release 2021	2	2021	2	2021
Test and Validation, All Sites: Test and Validation 1, All Sites 2016	1	2016	4	2021
Mid Year Release: Mid Year Release 2016	4	2016	4	2016
Mid Year Release: Mid Year Release 2017	4	2017	4	2017
Mid Year Release: Mid Year Release 2018	4	2018	4	2018
Mid Year Release: Mid Year Release 2019	4	2019	4	2019
Mid Year Release: Mid Year Release 2020	4	2020	4	2020
Mid Year Release: Mid Year Release 2021	4	2021	4	2021
Full Operating Capability (FOC) Combined: Full Operating Capability (FOC)/Full Development (FD)	2	2019	2	2019
Deployable Virtual Training Environment (DVTE)				
Software Development - Contract Award: Software Development - Contract Award (2021)	2	2021	2	2021
Software Development - Contract Award: Software Development - Contract Award (2020)	2	2020	2	2020
Software Development - Contract Award: Software Development - Contract Award (2019)	2	2019	2	2019
Software Development - Contract Award: Software Development - Contract Award (2018)	2	2018	2	2018
Software Development - Contract Award: Software Development - Contract Award (2017)	2	2017	2	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Software Development - Contract Award: Software Development - Contract Award (2016)	2	2016	2	2016
Software Development - Contract Award: Software Development - Contract Award (2015)	4	2015	4	2015
Software Development Version Release - VBS: Software Development Version Release - VBS (2015)	4	2015	4	2015
Software Development Version Release - VBS: Software Development Version Release - VBS (2016)	4	2016	4	2016
Software Development Version Release - VBS: Software Development Version Release - VBS (2017)	4	2017	4	2017
Software Development Version Release - VBS: Software Development Version Release - VBS (2018)	4	2018	4	2018
Software Development Version Release - VBS: Software Development Version Release - VBS (2019)	4	2019	4	2019
Software Development Version Release - VBS: Software Development Version Release - VBS (2020)	4	2020	4	2020
Software Development Version Release - VBS: Software Development Version Release - VBS (2021)	4	2021	4	2021
Marine Air/Ground Task Force (MAGTF) Tactical Warfare Simulation (MTWS)				
MTWS IPT/CCB: MTWS IPT/CCB 2015 - 1	2	2015	2	2015
MTWS IPT/CCB: MTWS IPT/CCB 2015 - 2	4	2015	4	2015
MTWS IPT/CCB: MTWS IPT/CCB 2016	3	2016	3	2016
MTWS IPT/CCB: MTWS IPT/CCB 2017	3	2017	3	2017
MTWS IPT/CCB: MTWS IPT/CCB 2018	3	2018	3	2018
MTWS IPT/CCB: MTWS IPT/CCB 2019	3	2019	3	2019
MTWS IPT/CCB: MTWS IPT/CCB 2020	3	2020	3	2020
MTWS IPT/CCB: MTWS IPT/CCB 2021	3	2021	3	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Contract Award: Contract Award 2015	2	2015	2	2015
Contract Award: Contract Award 2016 - 1	2	2016	2	2016
Contract Award: Contract Award 2016 - 2	3	2016	3	2016
Contract Award: Contract Award 2017 - 1	2	2017	2	2017
Contract Award: Contract Award 2017 - 2	3	2017	3	2017
Contract Award: Contract Award 2018 - 1	2	2018	2	2018
Contract Award: Contract Award 2018 - 2	3	2018	3	2018
Contract Award: Contract Award 2019 - 1	2	2019	2	2019
Contract Award: Contract Award 2019 - 2	3	2019	3	2019
Contract Award: Contract Award 2020 - 1	2	2020	2	2020
Contract Award: Contract Award 2020 - 2	3	2020	3	2020
Contract Award: Contract Award 2021 - 1	2	2021	2	2021
Contract Award: Contract Award 2021 - 2	3	2021	3	2021
Version 3.5.1 SW: SW Release: SW Release	1	2015	1	2015
Version 3.5.2 SW: User Acceptance Testing: User Acceptance Testing	2	2015	2	2015
Version 3.5.2 SW: SW Release: SW Release	3	2015	3	2015
Version 3.5.3 SW: User Acceptance Testing: User Acceptance Testing	4	2015	4	2015
Version 3.5.3 SW: SW Release: SW Release	1	2016	1	2016
Version 3.5.5 SW: User Acceptance Testing: User Acceptance Testing	4	2016	4	2016
Version 3.5.5 SW: SW Release: SW Release	1	2017	1	2017
Version 3.5.7 SW: User Acceptance Testing: User Acceptance Testing	4	2017	4	2017
Version 3.5.7 SW: SW Release: SW Release	1	2018	1	2018
Version 3.5.9 SW: User Acceptance Testing: User Acceptance Testing	4	2018	4	2018
Version 3.5.9 SW: SW Release: SW Release	1	2019	1	2019
Version 3.5.11 SW: User Acceptance Testing: User Acceptance Testing	4	2019	4	2019

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Version 3.5.11 SW: SW Release: SW Release	1	2020	1	2020
Version 3.5.13 SW: User Acceptance Testing: User Acceptance Testing	4	2020	4	2020
Version 3.5.13 SW: SW Release: SW Release	1	2021	1	2021
Version 3.5.15 SW: User Acceptance Testing: User Acceptance Testing	4	2021	4	2021
Ranges and Training Area Management				
RISCon Development: RISCon Development	1	2016	1	2016
Contract Award: Contract Award (2016)	1	2016	1	2016
Contract Award: Contract Award (2017)	1	2017	1	2017
Contract Award: Contract Award (2018)	1	2018	1	2018
Contract Award: Contract Award (2019)	1	2019	1	2019
Contract Award: Contract Award (2020)	1	2020	1	2020
Contract Award: Contract Award (2021)	1	2021	1	2021
Systems Integration: Systems Integration	1	2016	4	2021
Squad Immersive Training Environment (SITE)				
Virtual System Upgrade Deliverables: Virtual System Upgrade Deliverables	1	2015	4	2015
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2015)	2	2015	2	2015
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2016)	1	2016	1	2016
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2017)	1	2017	1	2017
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2018)	1	2018	1	2018
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2019)	1	2019	1	2019
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2020)	1	2020	1	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Live Core System Upgrades Contract Awards: Live Core System Upgrades Contract Awards (2021)	1	2021	1	2021
Consolidated Product Line Development Awards: Consolidated Product Line Development (2015)	4	2015	4	2015
Consolidated Product Line Development Awards: Consolidated Product Line Development (2016)	1	2016	1	2016
Consolidated Product Line Development Awards: Consolidated Product Line Development (2017)	1	2017	1	2017
Consolidated Product Line Development Awards: Consolidated Product Line Development (2018)	1	2018	1	2018
Consolidated Product Line Development Awards: Consolidated Product Line Development (2019)	1	2019	1	2019
Consolidated Product Line Development Awards: Consolidated Product Line Development (2020)	1	2020	1	2020
Consolidated Product Line Development Awards: Consolidated Product Line Development (2021)	1	2021	1	2021
Training Support				
Annual Software Release: Version 3.5.1	1	2015	1	2015
Annual Software Release: Version 3.5.2	3	2015	3	2015
Annual Software Release: Version 3.5.3	1	2016	1	2016
Annual Software Release: Version 3.5.5	1	2017	1	2017
Annual Software Release: Version 3.5.7	1	2018	1	2018
Annual Software Release: Version 3.5.9	1	2019	1	2019
Annual Software Release: Version 3.5.11	1	2020	1	2020
Annual Software Release: Version 3.5.13	1	2021	1	2021
Contract Awards: FY15 Award	2	2015	2	2015
Contract Awards: FY16 Award	2	2016	2	2016

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Contract Awards: FY17 Award	2	2017	2	2017
Contract Awards: FY18 Award	2	2018	2	2018
Contract Awards: FY19 Award	2	2019	2	2019
Contract Awards: FY20 Award	2	2020	2	2020
Contract Awards: FY21 Award	2	2021	2	2021
Supporting Arms Virtual Trainer (SAVT)				
SW Development and Install: FY15 Award Dev Installation	2	2015	2	2015
SW Development and Install: FY15 Award SW Development	3	2015	3	2015
Eng Lab Support: FY15 Eng Lab Labor Support	4	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2503: <i>Initial Issue</i>	39.700	4.783	1.241	3.462	-	3.462	4.385	4.794	4.351	4.450	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

- Name change from Improved Load Bearing Equipment to Individual Load Bearing Equipment (ILBE).
- Name change from Clothing and Flame Resistant Organizational Gear (FROG) to Marine Corps Uniforms (MCU).
- Name change from Family of Mountain Cold Weather Clothing & Equipment (FMCWCE) to Cold Weather and Mountaineering (CWM).
- Name change from Family of Individual Warfighting Equipment (FIWE) to Individual Warfighting Equipment (IWE).

The Family of Combat Equipment Support and Services portfolio was split into the Infantry Combat Equipment, Family of Field Medical Equipment, Family of Shelters, and Combat Feeding System portfolios in FY11.

The FY 2017 funding request was reduced by \$0.193 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

This funding provides research, development, test and evaluation on low cost items with an emphasis on Non-Developmental Items/Commercial-Off-the-Shelf (NDI/COTS) available items. Much of the RDT&E is conducted in coordination/concert with other services and joint organizations, and in consideration of RDT&E efforts being pursued by the other Services. Items approved for procurement will transition into Operation and Maintenance Marine Corps accounts for Individual Combat Equipment, Family of Field Medical Equipment, Family of Shelters, and Combat Field Feeding Systems. The benefits will be reduced logistics, less weight, improved combat effectiveness, better echelon I and II care for Marines, improved individual and unit protection, expeditionary feeding platforms, tactical mobility, etc. The employment of state of the art equipment will ensure Marines are equipped and supported with the best items that technology can offer.

The Infantry Combat Equipment portfolio of capabilities encompasses Marine Corps Uniforms, Cold Weather and Mountaineering, Individual Load Bearing Equipment, and Individual Warfighter Equipment research, development and testing of enhancements, upgrades and modifications to legacy systems and new developments. Funding for this capability area leverages other Services' and governmental partners' efforts to maximize returns on investment and promote coordination and cooperation for same or similar requirements and capabilities. The objective is to equip individual Marines with uniforms and combat equipment to maximize effectiveness in every environment across the full range of military operations.

The Family of Field Medical Equipment, Family of Shelters, and Combat Field Feeding System portfolio focus is to provide state of the art medical equipment (e.g. Authorized Medical Allowance (AMAL)/Authorized Dental Allowance (ADAL), Enroute Care, Mobile Medical Monitors, etc.), Family of Shelters (soft wall, different frames and fabrics, etc.), and Combat Field Feeding Systems (technology insertion for the Expeditionary Field Kitchen (EFK), Modernized Tray Ration Heating System. etc.).

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Marine Corps Uniforms (MCU)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued testing and evaluating Marine Corps Uniform Board (MCUB) and CMC Uniform initiatives for shade and female dress coat. - Continued clothing and fabric improvement efforts leveraging advanced technologies in uniform durability, design, and footwear development. - Continued research on tropical uniforms and development of affordable alternative to the Marine Corps Combat Utility Uniform (MCCUU). - Continued to support Marine clothing efforts, to include field and dress uniforms and certification of their associated accoutrements which includes badges, ribbons and devices. - Continued research, development and testing to increase effectiveness of Flame Resistant clothing, enhance appearance and service life of Seabag issued, which consist of initial basic training clothing, footwear, and associated individual uniform items. - Initiated research to reduce the load the Marines are required to transport by minimizing equipment. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue testing and evaluation of emerging MCUB and CMC uniform initiatives. - Continue clothing and fabric improvement efforts leveraging advanced technologies in uniform durability, design, and footwear development. - Continue research and development of tropical uniforms, including footwear, and develop affordable alternatives. - Continue to support Marine clothing efforts, to include field and dress uniforms and certification of their associated accoutrements which includes badges, ribbons and devices. - Continue research, development and testing to increase effectiveness of Flame Resistant clothing, enhance appearance and service life of Seabag issue, which consists of initial basic training clothing, footwear and associated accoutrements which includes badges, ribbons and devices. - Continue research to reduce the load the Marines are required to transport by minimizing equipment. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue testing and evaluation of MCUB and CMC Uniform initiatives. - Continue clothing and fabric improvement efforts leveraging advanced technologies in uniform durability, design, and footwear development. 	0.614	0.670	0.556	0.000	0.556
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Continue research and development of tropical uniforms, including footwear, and develop affordable alternatives. - Continue to support Marine clothing efforts, to include field and dress uniforms and certification of their associated accoutrements which includes badges, ribbons and devices. - Continue research, development and testing to increase effectiveness of Flame Resistant clothing, enhance appearance and service life of Seabag issue which consists of initial basic training clothing, footwear and associated accoutrements which includes badges, ribbons and devices. - Continue research on reducing the load the Marines are required to transport by minimizing equipment. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Cold Weather and Mountaineering (CWM)</p> <p align="right">Articles:</p>	0.861	0.092	0.827	0.000	0.827
<p>Description: Increase in funding from FY16 to FY17 (\$0.735M) supports the development efforts on the Extreme Cold Weather boot, ski systems, and all other components required for the cold weather environment that are in need of upgrade.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to conduct research and development of industry technology to further enhance existing equipment effectiveness while lightening the load of the individual Marine. - Continued research, development and design modifications to the Marine Corps sleep system to reduce load, increase insulation values, and maximize comfort levels. - Continued to develop and field test ski systems and all components in order to further redefine stated requirements. - Continued and validated cold weather boot that would function as a Ski boot and boot for non-ski borne Marines. - Continued a comparative analysis of sister services clothing items (cold weather warming layers) to leverage like items and technology, minimizing sustainment cost. - Initiated equipment technology advances which will drive the development of the Marine Assault Climbers Kit (MACK) to effectively and safely negotiate horizontal and vertical obstacles. - Completed Marine Corps Cold Weather Infantry Kit (MCCWIK) assessment and evaluation. <p>FY 2016 Plans:</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Continue to conduct research and development of industry technology to further enhance existing equipment effectiveness while lightening the load of the individual Marine. - Continue to develop and field test ski systems and all components, to include boots and clothing, in order to further redefine stated requirements. - Complete the analysis of sister services clothing items (cold weather warming layers, develop a conclusion of liked items and technology) in order to minimize sustainment cost. - Complete research, development and design modifications to the Marine Corps sleep system to reduced load, increase insulation values, and maximize comfort levels. - Complete development of the MACK to effectively and safely negotiate horizontal and vertical obstacles. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue to conduct research and development of industry technology to further enhance existing equipment effectiveness while lightening the load of the individual Marine. - Continue validation of ski systems and all components to include boots and clothing. - Initiate evaluation of Extreme Cold Weather boots. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Individual Load Bearing Equipment (ILBE)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Initiate exploration of potential avenues for product improvements and upgrades for ILBE by leveraging technological advancements of industry. - Initiate evaluations to implement minor product improvements to existing systems such as the USMC Pack System. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue to explore potential avenues for product improvements and upgrades for ILBE by leveraging technological advancements of industry; lighten load and increase mobility of effectiveness. - Continue evaluations to implement minor product improvements to existing USMC systems. <p>FY 2017 OCO Plans:</p>	0.000	0.298	0.242	0.000	0.242
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Individual Warfighter Equipment (IWE)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued cataloging for future sustainment of Mechanical Breachers Kit (MBK) through DLA. - Continued modernization of existing projects by leveraging the technological advances of industry. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue cataloging for future sustainment of MBK through DLA. - Continue modernization of existing projects by leveraging the technological advances of industry. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue cataloging for future sustainment of MBK through DLA. - Continue modernization of existing projects by leveraging the technological advances of industry. <p>FY 2017 OCO Plans:</p> <p>N/A</p>	0.097	0.001	0.217	0.000	0.217
	-	-	-	-	-
<p>Title: *Family of Field Medical Equipment (FFME)</p> <p align="right">Articles:</p> <p>Description: Increase of \$1.386M from FY16 to FY17 will support the initiation of BLAST Load Assessment testing in order to reduce Traumatic Brain Injury effects.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to test COTS/NDI medical equipment items for the Enroute Care System (ECSR) and Forward Resuscitative Surgical System (FRSS) to determine future viability in an operational environment. - Continued testing of medical equipment items to evaluate their energy efficiency, functionality and ability to improve the quality of healthcare provided to the warfighter and reduce the logistics footprint of USMC medical equipment. - Continued testing for possible application technology for insertion. - Continued collaborative testing with Army for patient movement research. - Completed COTS/NDI testing for X-Ray medical equipment for viability in operational environments. 	1.872	0.000	1.386	0.000	1.386
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Initiated collaborative development efforts with other services on the Autonomous Critical Care System (ACCS).</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue to test COTS/NDI medical equipment items for the ERCS and FRSS to determine future viability in an operational environment. - Continue testing of medical equipment items to evaluate their energy efficiency, functionality and ability to improve the quality of healthcare provided to the warfighter and reduce the logistics footprint of USMC medical equipment. - Continue testing for possible application technology for insertion. - Continue collaborative testing with Army for patient movement research. - Continue collaborative testing efforts with Army for ACCS. - Initiate collaborative testing efforts with Army for Blast Load Assessment: Sense and Test (BLAST) to determine viability in a operational environment in support of reduction of Traumatic Brain Injury (TBI) effects. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: *Family of Shelters and Shelter Equipment (FSSE)</p> <p align="right">Articles:</p>					
	1.127	0.180	0.130	0.000	0.130
	-	-	-	-	-
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Completed testing of energy efficient technologies and developed a system of systems shelter model to advise Program Manager on future procurements for soft wall shelters and new composite rigid wall shelter materials. - Completed initial component design for single source soft wall shelter heater to reduce overall heater inventory and reduce logistics footprint and burden. - Completed single side expandable rigid wall shelter prototype development in support of expeditionary operations. - Initiated design of Next Generation Heating (NGH) System for soft walled shelters. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Complete design of NGH System for soft walled shelters. 					

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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

Cold Weather and Mountaineering, Individual Load Bearing Equipment, Individual Warfighter Equipment, Marine Corps Uniforms: Items utilize various acquisition strategies. These programs leverage heavily on current developments and technology in commercial industry. As a result, the government's R&D phase is relatively short. Contracting is performed by either Marine Corps Systems Command Contracting Directorate, the Naval Research Laboratory or the U.S. Army Natick Soldier Research, Development and Engineering Center via Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts. ID/IQ contracts are used to decrease the government risk, allow maximum contract flexibility and capitalize on the savings realized by utilizing Economic Order (EO) Quantities.

Family of Shelters: The Shelter acquisition strategy is to modify NDI to further meet the requirements of the Marine Corps, to support development of multi-service items through inter-service agreements and to adopt COTS items.

Family of Field Medical Equipment: These programs leverage heavily on current development and technology in the commercial medical industry. The field medical acquisition strategy is to modify NDI and adopt COTS items.

Combat Field Feeding Systems: This program utilized various acquisition strategies and leverages heavily on current developments and technology in commercial industry and other Service field feeding systems. As a result, the government's RDTE phase is relatively short. Contracting is performed by either Marine Corps Systems Command Contracting Directorate or the U.S. Army Natick Soldier Research, Development and Engineering Center (DoD Executive Agent for Field Feeding) via ID/IQ contracts. ID/IQ contracts are used to decrease the government risk, allow maximum contract flexibility and capitalize on the savings realized by utilizing EO Quantities.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Family of Shelters and Shelter Equipment	MIPR	NSWC PCD : Panama City, FL	0.000	0.400	Sep 2015	0.000		0.000		-		0.000	0.000	0.400	-
Family of Combat Field Feeding Systems	WR	NSWC PCD : Panama City, FL	0.547	0.008	Mar 2015	0.000		0.000		-		0.000	0.000	0.555	-
Family of Shelters and Shelter Equipment	MIPR	USA NSRDEC : Natick, MA	0.500	0.188	Jul 2015	0.000		0.130	May 2017	-		0.130	0.000	0.818	-
Individual Load Bearing Equipment	MIPR	AFRL : Wright Patterson AFB	0.000	0.000		0.298	Dec 2015	0.242	Jan 2017	-		0.242	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	Various : Various	18.508	0.000		0.000		0.000		-		0.000	0.000	18.508	-
Family of Field Medical	MIPR	Natick : Natick, MA	0.000	0.398	Jun 2015	0.000	Mar 2016	0.000		-		0.000	0.000	0.398	-
Family of Combat Field Feeding Systems	MIPR	USA NSRDEC : Natick, MA	2.207	0.090	Sep 2015	0.000	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Individual Warfighter Equipment	MIPR	USA NSRDEC : Natick, MA	0.352	0.097	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Marine Corps Uniforms	MIPR	USA NSRDEC : Natick, MA	4.126	0.437	Feb 2015	0.481	Jun 2016	0.422	Jun 2017	-		0.422	Continuing	Continuing	Continuing
Family of Field Medical	MIPR	AFMESA : Ft. Detrick, MD	0.000	0.000		0.000	Jan 2016	0.000		-		0.000	0.000	0.000	-
Subtotal			26.240	1.618		0.779		0.794		-		0.794	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Cumulative Funding	Various	Various : Various	1.096	0.000		0.000		0.000		-		0.000	0.000	1.096	-
Subtotal			1.096	0.000		0.000		0.000		-		0.000	0.000	1.096	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

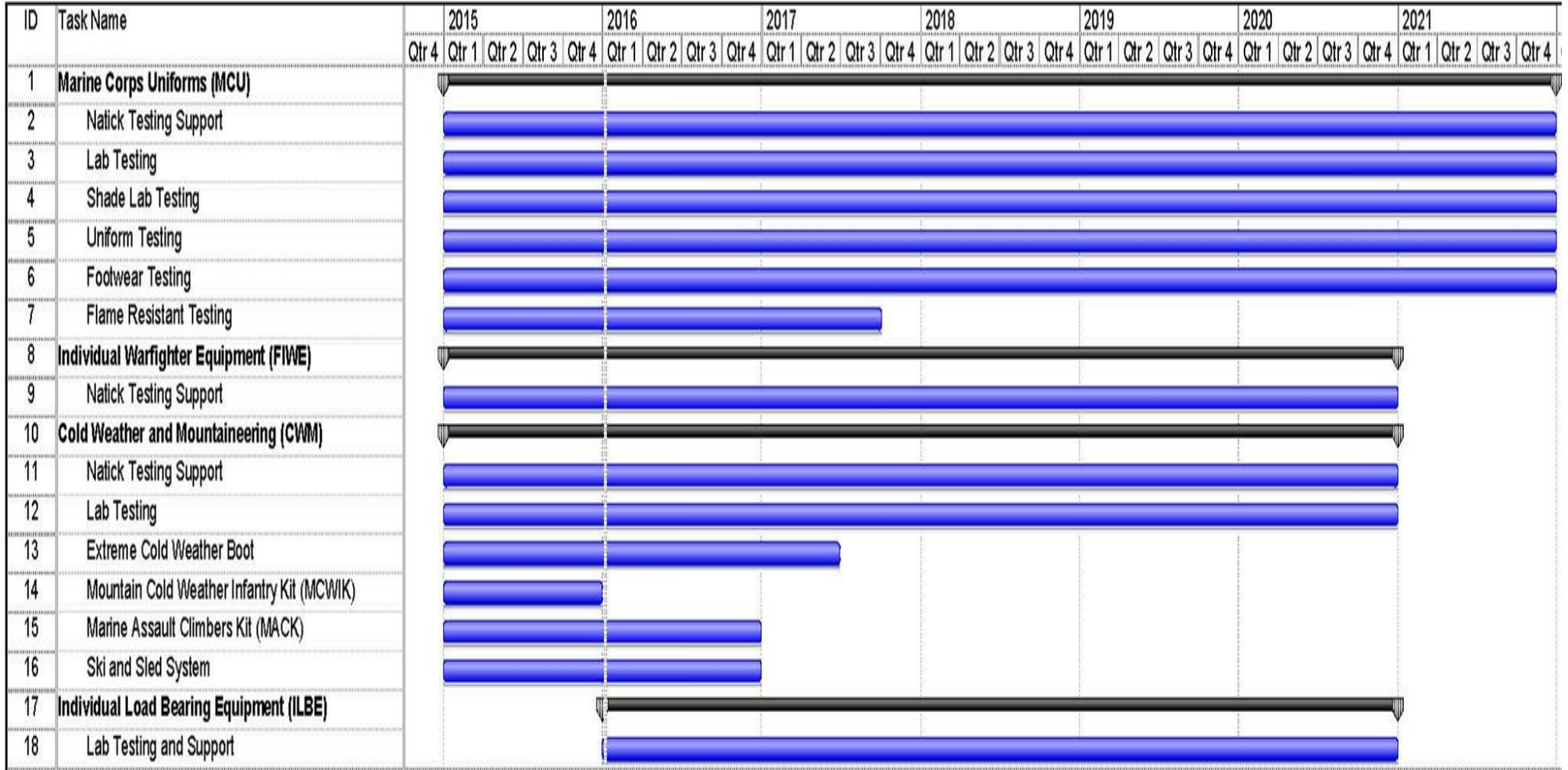
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2503 / Initial Issue
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Family of Shelters and Shelter Equipment	MIPR	NSRDEC : Natick, MA	0.000	0.011	Sep 2015	0.000		0.000		-		0.000	0.000	0.011	-
Family of Combat Field Feeding Systems	MIPR	ABERDEEN TEST CENTER : Aberdeen Proving Grounds, MD	0.000	0.056	Jun 2015	0.000		0.000		-		0.000	0.000	0.056	-
Family of Combat Field Feeding	MIPR	USA NSRDEC : Natick, MA	0.575	0.059	Oct 2015	0.000	Mar 2016	0.104	Jan 2017	-		0.104	Continuing	Continuing	Continuing
Marine Corps Uniforms	MIPR	USA NSRDEC : Natick, MA	0.301	0.177	Feb 2015	0.189	Jun 2016	0.134	Jun 2017	-		0.134	Continuing	Continuing	Continuing
Family of Shelter and Shelter Equipment	MIPR	REDSTONE TEST CENTER : Redstone Arsenal, AL	0.000	0.117	Feb 2015	0.000		0.000		-		0.000	0.000	0.117	-
Prior Year Cumulative Funding	Various	Various : Various	8.054	0.000		0.000		0.000		-		0.000	0.000	8.054	-
Family of Field Medical	WR	NMRC : Silver Spring, MD	0.093	0.302	Feb 2015	0.000		0.000		-		0.000	0.000	0.395	-
Family of Field Medical	MIPR	USAARL : Ft. Rucker, AL	0.574	0.882	Mar 2015	0.000	Jun 2016	1.159	Jul 2017	-		1.159	Continuing	Continuing	Continuing
Family of Field Medical	MIPR	USA NSRDEC : Natick, MA	1.383	0.000		0.000		0.000		-		0.000	0.000	1.383	-
Family of Shelters & Shelter Equipment	MIPR	USA NSRDEC : Natick, MA	0.456	0.125	Jan 2015	0.180	Mar 2016	0.000		-		0.000	0.000	0.761	-
Cold Weather and Mountaineering	MIPR	USA NSRDEC : Natick, MA	0.555	0.860	Jan 2015	0.092	Nov 2015	0.827	Jul 2017	-		0.827	Continuing	Continuing	Continuing
Family of Field Medical	WR	NHRC : San Diego, CA	0.000	0.270	Nov 2015	0.000	Jun 2016	0.000		-		0.000	0.000	0.270	-
Family of Field Medical	MIPR	AFMESA : Ft. Detrick, MD	0.000	0.000		0.000	Jan 2016	0.227	Mar 2017	-		0.227	0.000	0.227	-
Subtotal			11.991	2.859		0.461		2.451		-		2.451	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2503 / Initial Issue
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2503 / Initial Issue

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Infantry Combat Equipment (ICE)				
Marine Corps Uniforms (MCU): Navy Natick Testing Effort Support:	1	2015	4	2021
Marine Corps Uniforms (MCU): Lab Testing:	1	2015	4	2021
Marine Corps Uniforms (MCU): Shade Lab Testing:	1	2015	4	2021
Marine Corps Uniforms (MCU): Uniform Testing:	1	2015	4	2021
Marine Corps Uniforms (MCU): Footwear Testing:	1	2015	4	2021
Marine Corps Uniforms (MCU): Flame Resistant Testing:	1	2015	3	2017
Individual Warfighter Equipment (IWE): Natick Lab Testing:	1	2015	4	2020
Cold Weather and Mountaineering (CWM): Natick Testing Effort Support:	1	2015	4	2020
Cold Weather and Mountaineering (CWM): Lab Testing:	1	2015	4	2020
Cold Weather and Mountaineering (CWM): Extreme Cold Weather Boot:	1	2015	2	2017
Cold Weather and Mountaineering (CWM): Mountain Cold Weather Infantry Kit (MCWIK):	1	2015	4	2015
Cold Weather and Mountaineering (CWM): Marine Assault Climbers Kit (MACK):	1	2015	4	2016
Cold Weather and Mountaineering (CWM): Ski and Sled System:	1	2015	4	2016
Individual Load Bearing Equipment (ILBE): Lab Testing and Support:	1	2016	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2513: <i>Body Armor</i>	45.100	2.764	3.160	2.746	-	2.746	4.814	4.728	4.704	4.809	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

This program was previously justified in PE 0206623M Project 2503 Initial Issue under Family of Ballistic Protection Systems (FBPS) has changed to Ballistic Protection Systems (BPS). Body Armor Development (BAD) has changed to Next Generation Personal Protective Equipment (PPE).

The FY 2017 funding request was reduced by \$0.222 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

Ballistic Protection Systems (BPS) provides the most technologically advanced protection at the lightest weight available in the world today. With current combat operations these items have generated considerable Congressional and public interest because the items are considered life-saving equipment. When evaluated in total, personal protective equipment programs provide the critical systems that save lives, reduce the severity of combat injuries, and increase combat effectiveness by keeping more Marines in the fight. These programs are truly force multipliers today and will be for the future. The major focus of PPE programs is to address emergent threats on the battlefield. PPE must consistently adapt to combat new threats. Next Generation PPE programs include body armor (both hard and soft armor-formally known as Modular Scalable Vest), Enhanced Small Arms Protective Inserts (ESAPI), Helmets (i.e. Enhanced Capabilities Helmet-ECH), Eye and Hearing protection.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Ballistic Protection Systems	2.764	3.160	2.746	0.000	2.746
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued research with industry partners towards understanding and developing the future technology associated with next generation PPE (i.e. helmets, body armor, eyewear, and hearing protection).					
-Continued to research active and passive hearing protection products that provide a sense of presence and protection against transient impact noise and blocks and/or reflects harmful blast shock wave in the ear canal.					
-Initiated testing for the next generation of eyewear, specifically the capability to adjust rapidly in varying light conditions in order to gap the need for rapid situational awareness in different light environments.					
-Initiated testing on the efficacy of plates as they age over time in order to obtain a clear understanding of the need to consistently sustain and maintain current plates, as well as, their future ballistic capability.					
-Initiated ECH Characterization Testing.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Continue research with industry partners towards understanding and developing the future technology associated with next generation PPE (i.e. helmets, body armor, eyewear, and hearing protection).</p> <p>-Continue to research active and passive hearing protection products that provide a sense of presence and protection against transient impact noise and blocks and/or reflects harmful blast shock wave in the ear canal.</p> <p>-Continue testing on the efficacy of plates as they age over time in order to obtain a clear understanding of the need to consistently sustain and maintain current plates, as well as, their future ballistic capability.</p> <p>-Continue testing for the next generation of eyewear, specifically the capability to adjust rapidly in varying light conditions in order to gap the need for rapid situational awareness in different light environments.</p> <p>-Complete ECH Characterization Testing.</p> <p>FY 2017 Base Plans:</p> <p>-Continue research with industry partners towards understanding and developing the future technology associated with next generation PPE (i.e. helmets, body armor, eyewear, and hearing protection).</p> <p>-Continue to research active and passive hearing protection products that provide a sense of presence and protection against transient impact noise and blocks and/or reflects harmful blast shock wave in the ear canal.</p> <p>-Continue testing for the next generation of eyewear, specifically the capability to adjust rapidly in varying light conditions in order to gap the need for rapid situational awareness in different light environments.</p> <p>-Continue testing towards the need for active and passing hearing protection for Marines in high auditory environments in order to increase situational awareness, while maintaining healthy auditory health.</p> <p>-Continue testing on the efficacy of plates as they age over time in order to obtain a clear understanding of the need to consistently sustain and maintain current plates, as well as, their future ballistic capability.</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
Accomplishments/Planned Programs Subtotals	2.764	3.160	2.746	0.000	2.746

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
Marine Corps Ballistic Protection Systems (BPS) research, development, testing & evaluation activities include seeking new developments in ballistic technology that feature reductions in weight, improvements in ballistic performance, enhanced operational effectiveness through improved product designs and the application of new

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0206623M / MC Ground Cmbt Spt Arms Sys	2513 / Body Armor

material technologies to reduce total ownership costs by improving the expected service life of fielded systems. In order to accomplish these goals, Product Manager-Infantry Combat Equipment uses a broad array of government and contractor performers to achieve the desired end state. This includes partnerships with government performers and research and development contracts and partnership intermediaries where applicable. The Marine Corps also leverages advancements in industry capabilities to rapidly field non-developmental and commercially available off the shelf armor solutions. Performance is confirmed by characterizing ballistic performance and data collected during user evaluations.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Cumulative Funding	Various	Various : Various	2.363	0.000		0.000		0.000		-		0.000	0.000	2.363	-
Ballistic Protection Systems	MIPR	USA NSRDEC : Natick, MA	8.700	0.045	Mar 2015	0.542	Apr 2016	0.651	Feb 2017	-		0.651	Continuing	Continuing	Continuing
Ballistic Protection Systems	C/FFP	NRL : Washington DC	16.138	0.000		0.275	Feb 2016	0.277	Apr 2017	-		0.277	Continuing	Continuing	Continuing
Ballistic Protection Systems	MIPR	NCTRF : Natick MA	1.200	0.084	Jan 2015	0.136	Jan 2016	0.136	Apr 2017	-		0.136	Continuing	Continuing	Continuing
Ballistic Protection Systems	MIPR	AFRL/MILTECH : Wright Patterson, OH	3.292	0.200	Apr 2015	0.290	Nov 2015	0.560	Mar 2017	-		0.560	Continuing	Continuing	Continuing
Ballistic Protection Systems	C/CPFF	MCSC : Quantico, VA	0.000	0.000		0.200	Apr 2016	0.000		-		0.000	0.000	0.200	-
Ballistic Protection Systems	WR	OFC NAVAL RESEARCH : Arlington, VA	0.000	0.000		0.080	Feb 2016	0.000		-		0.000	0.000	0.080	-
Subtotal			31.693	0.329		1.523		1.624		-		1.624	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Cumulative Funding	Various	Various : Various	3.296	0.000		0.000		0.000		-		0.000	0.000	3.296	-
Ballistic Protection Systems	MIPR	USA NSRDEC : Natick, MA	7.380	0.157	Feb 2015	0.295	Dec 2016	0.000		-		0.000	0.000	7.832	-
Ballistic Protection Systems	MIPR	USA ATC : Aberdeen Prv Grnd, MD	0.458	0.275	Jun 2015	0.300	Apr 2016	0.377	Apr 2017	-		0.377	Continuing	Continuing	Continuing
Ballistic Protection Systems	MIPR	AFRL : Wright Patterson, OH	0.340	0.045	Jan 2016	0.000		0.245	Jan 2017	-		0.245	Continuing	Continuing	Continuing
Ballistic Protection Systems	WR	NRL : Washington, DC	1.571	1.420	Feb 2015	0.310	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ballistic Protection Systems	WR	NSWC : Dahlgren, VA	0.362	0.155	Feb 2015	0.000		0.275	Jan 2017	-		0.275	0.000	0.792	-
Ballistic Protection Systems	MIPR	ARL : Various	0.000	0.383	Aug 2015	0.000		0.225	Jun 2017	-		0.225	0.000	0.608	-
Ballistic Protection Systems	WR	OFC NAVAL RESEARCH : Arlington, VA	0.000	0.000		0.112	Jun 2016	0.000		-		0.000	0.000	0.112	-
Ballistic Protection Systems	MIPR	USA ATC : Aberdeen Prv Grnd	0.000	0.000		0.560	Jan 2016	0.000		-		0.000	0.000	0.560	-
Ballistic Protection Systems	WR	MCOTEA : Quantico, VA	0.000	0.000		0.060	Nov 2015	0.000		-		0.000	0.000	0.060	-
Subtotal			13.407	2.435		1.637		1.122		-		1.122	-	-	-
Project Cost Totals			45.100	2.764		3.160		2.746		-		2.746	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor
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ID	Name	2015				2016				2017				2018				2019				2020				2021			
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	Plate Carrier (PC) Improvements, LDS, Fit Study																												
2	Marine Corps Body Armor Surveillance Program (MC BASP)																												
3	Modular Scalable Plate (MSP)																												
4	Body Armor Base Layer (BBL)																												
5	Enhanced Combat Helmet (ECH)																												
6	Next Generation Helmet																												
7	Hearing Protection																												
8	Eye Protection																												

Project: Body Armor & Load Bear Task
 Date: Mon 1/4/16

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2513 / Body Armor

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2513				
Plate Carrier (PC) Improvements, LDS, Fit Study:	1	2015	4	2021
Marine Corps Body Armor Surveillance Program (MC BASP):	1	2015	4	2021
Modular Scalable Plate (MSP):	1	2015	2	2016
Body Armor Base Layer (BBL):	1	2015	4	2016
Enhanced Combat Helmet (ECH):	1	2015	3	2016
Next Generation Helmet:	1	2015	4	2021
Hearing Protection:	1	2015	4	2021
Eye Protection:	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 2928 / Exp Indirect Fire Gen Supt Wpn Sys			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2928: Exp Indirect Fire Gen Supt Wpn Sys	9.657	1.807	1.381	1.054	-	1.054	2.976	2.614	2.142	2.189	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

High Mobility Artillery Rocket Systems (HIMARS) is a C-130 transportable, wheeled, indirect fire, rocket/missile system capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM). The system includes one launcher, two Re-Supply Systems, and the MFOM. HIMARS will provide the Fleet Marine Force with 24 hour ground-based, responsive General Support/General Support Reinforcing (GS/GSR) indirect fires which accurately engage targets at long range (60+km), with high volumes of lethal fire under all weather conditions throughout all phases of combat operations ashore, to include irregular warfare and distributed operations. HIMARS is a significant improvement over previously fielded ground fire support systems. During a 24 hour period, the system is expected to conduct multiple moves and multiple fire missions. Guided Multiple Launch Rocket System (GMLRS) is the primary munition for USMC units fielded with the HIMARS. GMLRS provides medium, and long range precision and area fires to destroy and/or suppress threat forces. GMLRS integrates GPS guidance to achieve accuracy, requiring fewer rockets to defeat targets, and thus reduces the logistics burden.

The three fielded variants are GMLRS with Dual Purpose Improved Conventional Munitions (DPICM/Increment 1) and GMLRS Unitary (U/Increment 2), a 200 pound class high explosive warhead and the alternative warhead (AW). The GMLRS U integrates a multi-mode fuse and high explosive warhead making it an all-weather, low collateral damage, precision strike rocket. GMLRS U expands the MLRS target set into urban and complex environments by adding point, proximity, and delay fusing modes. GMLRS U was fired in support of Overseas Contingency Operations (OCO), and has demonstrated high effectiveness and low collateral damage while supporting Marines in combat. A third variant of GMLRS, the alternative warhead (AW/Increment 3) is being developed to replace DPICM and meet the requirements outlined in a 25 June 2008 cluster munitions policy, which requires all cluster munitions by 2019 to produce less than 1% Unexploded Ordinance (UXO) on the battlefield. GMLRS/AWP begins production in FY15. HIMARS satisfies the Marine Corps requirement for an indirect fire system that is responsive, maneuverable, and is capable of engaging targets at long range. The Reduced Range Practice Rocket (RRPR) includes training devices for tactical training, classroom training and handling exercises.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: HIMARS Testing	0.500	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Executed in conjunction with the U.S. Army, the Support Test and Evaluation Program for Marine Corps Principle End Items. The U.S. Army Program Office continues to provide improvements to these end items (e.g. alternate warheads). This funding will be used to provide adequate support and oversight to ensure testing supports Marine Corps requirements					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2928 / Exp Indirect Fire Gen Supt Wpn Sys

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments: Initiated Guided Multiple Launch Rocket System (GMLRS) follow on testing consisting of any testing required due to deficiencies discovered during U.S. Army E3 testing at Redstone Test Center (RTC) or during Shipboard Shock & Vibration testing at NSWCDD and as required by the Marine Corps Systems Command and NSWCDD.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: HIMARS Fire Control Obsolescence</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued evaluation efforts that focus on improving HIMARS readiness, reliability and maintainability by eliminating obsolete parts and reducing the number of Line Replaceable Units (LRUs) by consolidating Fire Control System functions.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	1.307 -	0.000 -	0.000 -	0.000 -	0.000 -
<p>Title: HIMARS Expeditionary & Naval Integration Capabilities</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p>	0.000 -	1.381 -	1.054 -	0.000 -	1.054 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue the Marine Corps study of the capability to employ HIMARS from distributed locations and naval platforms, or surface connectors to support distributed maneuvers. -Continue development of long range precision fires capabilities for HIMARS from austere and expeditionary bases. FY 2017 Base Plans: -Integrate and test new radios that meet new NSA encryption standards. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.807	1.381	1.054	0.000	1.054

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/BLI 221200: High Mobility Artillery Rocket System (HIMARS)	22.913	16.330	33.725	-	33.725	40.521	36.345	35.451	36.141	Continuing	Continuing

Remarks

D. Acquisition Strategy

USMC HIMARS is procuring the Army rocket launcher, the current/future Multiple Launch Rocket System Family of Munitions (MFOM) and a Medium Tactical Vehicle Replacement (MTVR) based Resupply System (truck(s) with associated trailer(s)). The Marine Corps launcher and ammo requirements closely match U.S. Army requirements. The U.S. Army HIMARS program received increased funding and is now an Acquisition Category (ACAT) IC level program. Marine Corps Resupply System requirements are unique. Accordingly, the Marine Corps is an integrator and must ensure the required warfighting capability is fielded to the Marine Corps operating forces. The USMC has aligned funds to reflect an emphasis on not only hardware development, but also the integration of these principle end items while providing associated evaluation and oversight, and the development of associated rocket munitions in conjunction with the Army. Additionally, the Marine Corps program is establishing the training and support methodologies that will result in associated skill sets required within the Marine Corps. The Marine Corps strategy is incorporating acquisition and capability upgrades to both the systems and rocket munitions. These improvements parallel the U.S. Army's acquisition strategy.

E. Performance Metrics

Milestone Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2928 / Exp Indirect Fire Gen Supt Wpn Sys
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Expeditionary radio capabilities	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.600	Feb 2016	1.054	Dec 2016	-		1.054	0.000	1.654	-
Expeditionary capabilities	MIPR	RDEC : Redstone Arsenal, AL	0.000	0.000		0.781	Feb 2016	0.000		-		0.000	0.000	0.781	-
Subtotal			0.000	0.000		1.381		1.054		-		1.054	0.000	2.435	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GMLRS follow on testing	MIPR	Redstone Test Ctr : Redstone, AL	0.000	0.500	Feb 2015	0.000		0.000		-		0.000	0.000	0.500	-
Fire Control Obsolescence	MIPR	Redstone Test Ctr : Redstone, AL	0.000	1.307	Feb 2015	0.000		0.000		-		0.000	0.000	1.307	-
Prior year cumulative funding	Various	various : various	4.013	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			4.013	1.807		0.000		0.000		-		0.000	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year cumulative funding	Various	Various : Various	5.644	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			5.644	0.000		0.000		0.000		-		0.000	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			9.657	1.807	1.381	1.054	-	1.054	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2928 / Exp Indirect Fire Gen Supt Wpn Sys
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Proj 2928	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
GMLRS																												
GMLRS Alternative Warhead Milestone C			▲																									
GMLRS Alternative Warhead Operational Test		▲																										
GMLRS Alternative Warhead Full Rate Production			▲																									
Expeditionary Radio Capabilities																												
Radio Capability Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 2928 / Exp Indirect Fire Gen Supt Wpn Sys

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2928				
GMLRS: GMLRS Alternative Warhead Milestone C: GMLRS Alternative Warhead Milestone C	3	2015	3	2015
GMLRS: GMLRS Alternative Warhead Operational Test: GMLRS Alternative Warhead Operational Test	2	2015	2	2015
GMLRS: GMLRS Alternative Warhead Full Rate Production: GMLRS Alternative Warhead Full Rate Production	3	2015	3	2015
Expeditionary Radio Capabilities: Radio Capability Testing:	2	2016	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 3098 / Fire Support System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3098: <i>Fire Support System</i>	129.185	9.207	11.940	5.242	-	5.242	6.099	5.818	5.549	5.671	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops Joint and Marine Corps unique improvements to artillery fire support technology that supports the artillery triad of fires and fire support equipment. These initiatives include but are not limited to the following: the Expeditionary Fire Support System (EFSS), munitions development & testing (to include rocket munitions), as well as testing and development of the Family of Artillery Munitions (FAM), Common Laser Ranger Finder (CLRF) integrated capability, and the Modeled Meteorological Information Manager (MMIM).

EFSS is an all-weather, ground based indirect fire system designed to support the vertical assault element of the Ship-To-Objective Maneuver (STOM) force. The EFSS is defined as a Launcher, Mobility Platform (prime mover), Ammunition, Ammunition Supply Vehicle, and Technical Fire Direction and Control equipment necessary for orienting weapons to an azimuth of fire. EFSS supports irregular warfare and distributed operations. The decrease of \$6.698M from FY16 to FY17 is due to the Precision Extended Range Munition (PERM) round which is currently in the final stages of development. FY17 will complete qualification.

FAM is used to develop and mature artillery munitions for the Marine Corps triad of fire. This includes conducting safety analysis and ship compatibility studies.

The Modeled Meteorological Information Manager (MMIM) is the primary artillery meteorological capability at the artillery battalion and regiment providing the ability to create, receive, manage, and transmit near real time gridded meteorological information supporting artillery and target acquisition systems.

The Fire Support Mod Line (FSML) is a set of Marine Corps efforts to address critical operational and logistics deficiencies in existing, fielded fire support/weapons systems and equipment. FSML provides technical refresh and development of target acquisition, artillery survey, meteorological systems, weapon systems, and fire direction control. Funding is used to ensure Clinger Cohen Act (CCA) and Information Assurance (IA) requirements are met, execution of product improvements/modifications, and upgrades to system hardware and software for the Ground Counter Fire Sensor (GCFS), Marine Artillery Survey Set (MASS), Meteorological Station Group (MSG), Global Positioning System Survey (GPS-S) and the Improved Position Azimuth Determining System (IPADS), Lightweight Target Designator (LTD), the Joint Terminal Attack Controller-Laser Target Designator (JTAC-LTD), and the CLRF as well as for upgrades, engineering change proposals, and modifications for guided munitions and fire control systems. Funding is also used for upgrades, engineering change proposals (ECPs) and modifications for guided munitions and fire control systems which falls within Fire Support Systems for the Marine Corps.

The Family of Internally Transportable Vehicles (FITV) consists of two variants of tactical ground vehicles for use by the Ground Combat Element (GCE) of a Marine Air Ground Task Force (MAGTF). The ITV Light Strike Variant (LSV) is outfitted primarily with a heavy machine gun or grenade launcher and transports four Marines plus 2000 lbs of cargo. The ITV Prime Mover (PM) is used to support the Expeditionary Fire Support System (EFSS), towing the 120MM Mortar and Ammo Trailer, while transporting two Marines. Both the LSV and PM are internally transportable inside the MV-22 and CH-53 aircraft.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
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Conventional Ground Ammunition is a project that identifies and develops Insensitive Munitions (IM) Technologies to address IM shortfalls in new Marine Corps development or improvements to legacy Conventional Ground Ammunition to meet OSD mandated IM compliance requirements. These IM Technology investments directly support the development of the bi-annual Marine Corps Insensitive Munitions Strategic Plan (IMSP) to address the identified IM technology needs of the Marine Corps.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Modeled Meteorological Information Manager (MMIM)</p> <p align="right">Articles:</p> <p>Description: The Modeled Meteorological Information Manager (MMIM) is the primary artillery meteorological capability at the artillery battalion and regiment providing the ability to create, receive, manage, and transmit near real time gridded meteorological information supporting artillery and target acquisition systems significantly enhancing the accuracy of meteorological information. MMIM is saving over \$1.3 million in annual operations, maintenance, and fuel costs by eliminating the requirement for 42 M1152 High Mobility Multi-purpose Wheeled Vehicles, 21 M101A3 Trailers and 21 OV-103 Generator Groups associated with the current legacy capability.</p> <p>FY 2015 Accomplishments: -Continued testing and integration of the MMIM to support software development and information assurance activities.</p> <p>FY 2016 Plans: -Initiate research and technical support efforts to enhance communication of meteorological data that will support the production of computer meteorological messages for use with Advanced Field Artillery Tactical Data System (AFATDS) to support battalion artillery operations.</p> <p>FY 2017 Base Plans: -Complete testing of MMIM forecast capability.</p> <p>FY 2017 OCO Plans: N/A</p>	0.210	0.261	0.242	0.000	0.242
	-	-	-	-	-
<p>Title: Expeditionary Fire Support Systems (EFSS)</p> <p align="right">Articles:</p> <p>Description: EFSS is an all-weather, ground based indirect fire system designed to support the vertical assault element of the Ship-To-Objective Maneuver (STOM) force. EFSS is defined as a Launcher, Mobility Platform (prime mover), Ammunition, Ammunition Supply Vehicle, and Technical Fire Direction and control equipment</p>	6.634	8.729	2.868	0.000	2.868
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>necessary for orienting weapons to an azimuth of fire. EFSS supports irregular warfare and distributed operations.</p> <p>FY 2015 Accomplishments: -Completed Precision Extended Range Munition (PERM) demonstration testing. -Initiated engineering and safety analysis of the demonstration test results.</p> <p>FY 2016 Plans: -Initiate the development of Low Rate Initial Production (LRIP) test assets that will be destroyed during test. -Initiate the development of Tabular Firing Tables, Centaur and Advanced Field Artillery Tactical Data System (AFATDS) updates and final Gunner Display Unit - Marine (GDU-M) software development, all for use in support of PERM Type Qualification Testing (TQT) and LRIP testing. The increase of \$2.095M from FY15 to FY16 is due to the Precision Extended Range Munition (PERM) round production contract and the related engineering support, type qualification testing, and tabular firing table development.</p> <p>FY 2017 Base Plans: -Complete PERM qualification testing. -Tabular Firing Table development for PERM. The decrease of \$5.861M from FY16 to FY17 is due to the Precision Extended Range Munition (PERM) round which is currently in the final stages of development.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Fire Support Mods (FSM)</p> <p align="right">Articles:</p> <p>Description: Funding is used for upgrades, engineering change proposals (ECP), and modifications to system hardware and software for the Ground Counter Fire Sensor (GCFS), Marine Artillery Survey Set (MASS), Meteorological Station Group (MSG), Global Positioning System Survey (GPS-S), the Improved Position Azimuth Determining System (IPADS), and the Joint Terminal Attack Controller-Laser Target Designator (JTAC-LTD) as well as technical refresh for target acquisition, and artillery survey and meteorological systems. Funding is also used for upgrades, Engineering Change Proposals (ECPs) and modifications for guided munitions and fire control systems which falls within Fire Support Systems for the Marine Corps.</p>	1.616	1.790	1.099	0.000	1.099
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Initiated research and analysis efforts to determine acoustic requirements to support the development of future acoustic sensor capabilities. - Initiated the development of an ECP to transition the Azimuth and Inertial Micro-Electromechanical System (MEMS) Future Naval Capability (AIM/FNC) into fielded targeting systems. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Complete integration of AIM/FNC into fire support systems which will provide near 100% 2 mil azimuth availability to support targeting. The AIM/FNC program goal is to demonstrate a handheld, lightweight, affordable inertial navigation system (INS) capable of accurate azimuth determination in all environments, which will significantly improve the capabilities of ground-based, small unit fires. -Initiate engineering and research efforts to determine future IPADS capability requirements to support future artillery survey. -Initiate efforts to demonstrate GCFS digital communications capability in a breadboard configuration. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Initiate development of advanced components for the IPADS replacement system. - Initiate developmental testing of acoustic detection system to replace GCFS system. - Initiate product improvements to increase performance capability of legacy targeting systems. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Family of Artillery Munitions (FAM)</p> <p align="right">Articles:</p>	0.284	0.310	0.310	0.000	0.310
<p>Description: FAM - Efforts include acquisition planning for future munitions, replacement of existing stockpiles, and providing technologically enhanced artillery munitions in order to mitigate/fill capability gaps in range, accuracy, and lethality and reduce undue logistical burden. Additionally, the program office addresses Weapon System Explosives Safety Review Board (WSESRB) requirements for naval transportation issues for all artillery projectiles, propellants, and fuzes.</p> <p>FY 2015 Accomplishments:</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>-Initiated efforts to monitor and support U.S. Army artillery ammunition programs in order to leverage and influence Army developmental efforts. Resolved outstanding Precision Guidance Kit(PGK) WSESRB actions.</p> <p>FY 2016 Plans: -Continue to monitor and support joint development with U.S. Army artillery ammunition programs in order to leverage and influence Army developmental efforts. Provide USMC specific safety analysis for M1123 (IR) and M1124 (VL).</p> <p>FY 2017 Base Plans: -Continue to monitor and support joint development with U.S. Army artillery ammunition programs in order to leverage and influence Army developmental efforts. Provide USMC specific safety analysis for M1122, M1123 (IR) and M1124 (VL).</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Family of Internally Transportable Vehicle (FITV)</p> <p align="right">Articles:</p> <p>Description: Internally Transportable Vehicle (ITV) program fields expeditionary vehicles to ground units to support various operations. Provides the Marine Air-Ground Task Force (MAGTF) ground combat units with a vehicle transportable in the MV-22 and CV-22 tilt-rotor aircraft as well as the CH53. The ITV is an integral part of the Expeditionary Fire Support System (EFSS).</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: -Initiate comparative analysis and modeling to support proposed modification recommendations required to increase the FITV system readiness, safety and reliability. Engineering efforts to improve the system readiness of the FITV.</p> <p>FY 2017 Base Plans: -Initiate streamlined acquisitions of Commercial-Off-the-Shelf/Non-Developmental Items (COTS/NDI) that can be identified, integrated and tested in a short amount of time. FITV funding will continue modifications required to increase the FITV system readiness, safety and reliability. Successful modifications and tests are intended</p>	0.000 -	0.350 -	0.253 -	0.000 -	0.253 -

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
for follow-on procurement and incorporation into existing system component upgrades, Service Life Extension Programs (SLEPs), or rapid COTS/NDI fielding for the Fleet Marine Forces (FMF).					
FY 2017 OCO Plans: N/A					
Title: Conventional Ground Ammunition	0.463	0.500	0.470	0.000	0.470
Articles:	-	-	-	-	-
Description: All DoD services are required to field munitions that are insensitive munitions (IM) compliant. IM compliancy is measured by the performance of munitions to six tests; Fast Cook-Off, Slow Cook-Off, Bullet Impact, Fragment Impact, Sympathetic Detonation, and Shape Charge Jet. Services are required to submit IM Strategic Plans annually delineating how they intend on executing their Service IM effort to maximize IM improvements to both new development and legacy conventional ground ammunition. These IM Strategic Plans, Supporting Plan of Actions, and Milestones, with funding trial, are submitted to the JROC, demonstrating each Service's commitment to the continuing effort to improve IM characteristics of Conventional Ground Ammunition, for approval. In order to achieve the system's IM performance, the Conventional Ground Ammunition developer/owner must have new technology identified and available to address IM shortfalls at the onset of the ammunition development or available for insertion during improvement opportunities for legacy ammunition. Under this program, the USMC invests in IM technology which will improve its existing munitions IM reactions or ability to reliably initiate IM technologies and complies with the OSD mandate for maximum feasible IM compliance.					
FY 2015 Accomplishments: Continued - (1) Fire-From-Enclosure Rocket IM Propulsion (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) - Venting design development - Eutectic material proof of concept - Slow Cook-Off testing (design verification/improvement) (2) IM Compliant 120mm Tail Charge (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) - Continued Propellant Characterization assessments/tests - Continued Fiber Reinforced Plastic Fin Boom development & testing - Slow Cook-Off Testing to determine auto-ignition temperature of components					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Perform follow on Slow Cook-Off Testing and Fast Cook-Off Testing (3) Multi Point Initiation System (Naval Surface Warfare Center Indian Head Explosive Ordnance Disposal Technology Division, Indian Head, MD) - Completed testing of new array designs against NTO/HMX explosive fills - Completed characterization output of array FY 2016 Plans: Continue - (1) Fire-From-Enclosure Rocket IM Propulsion (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) -Final vent design verification/qualification (2) IM Compliant 120mm Tail Charge (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) -Complete IM propellant formulation -Initiate Full scale IM testing. (3) Thermally Initiated Venting System (Systema Technologies, Inc., Kirkland, WA) -Evaluate feasibility and develop a concepts of operation for a TIVS for the Mk 22 Rocket Motor FY 2017 Base Plans: Continue - (1) Fire-From-Enclosure Rocket IM Propulsion (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) -Integrate IM technology into weapon (2) IM Compliant 120mm Tail Charge (U.S. Army Armament Research Development and Engineering Center, Picatinny, NJ) -Integrate IM technology into weapon FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	9.207	11.940	5.242	0.000	5.242

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/2064: Expeditionary Fire Support Systems	0.514	0.000	3.360	-	3.360	0.624	0.063	0.065	0.066	0.000	94.240
• PMC/473301: Modeled Meterological Information Manager (MMIM)	1.335	0.450	0.488	-	0.488	0.505	0.462	0.472	0.482	0.000	10.541
• PMC/473302: Fire Support Mods	2.649	3.532	3.552	-	3.552	3.675	3.750	3.828	3.903	0.000	79.780
• PMC/5230: Motor Transport Modification	4.418	1.108	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/6545: Family of ITV	0.000	7.533	9.654	-	9.654	1.545	0.562	0.573	0.584	0.000	102.851
• PMC/5050: Motor Transport Modification	0.000	0.000	4.302	-	4.302	3.993	3.302	3.370	3.436	Continuing	Continuing

Remarks

D. Acquisition Strategy

These programs range from off-the-shelf modifications to developmental items. Development will typically be conducted at government labs.

Expeditionary Fire Support System (EFSS) and the Precision Extended Range Munition (PERM):

The acquisition approach for PERM is being conducted in two phases; In Step 1, two CPFF contracts were awarded to two vendors for the development and delivery of production representative rounds. Step 1 allows the development of existing technology, the management of technology risks, and demonstration of PERM designs prior to Milestone C (MS C). In Step 2 one FFP contract will be awarded for the production and delivery of the Total Munitions Requirement (TMR). PERM will provide EFSS GPS precision guidance and double the current max range.

Family of Artillery Munitions (FAM):

Program includes four (4) artillery munitions which are being developed by the Army. The Army is the lead service for these programs but continues to interact with the FAM IPT to ensure USMC requirements and capability needs are met. This allows the USMC to become users of the munition and certify the round for naval transportation. The munitions include but are not limited to; XM1156 Precision Guidance Kit (PGK), M1122 and M1123 Infrared (IR) and M1124 Visual Light (VL) 155mm RAP Round. Each munitions' status is tracked to ensure Marine Corps requirements are satisfied throughout the systems lifecycle.

MMIM: The Marine Corps is an active participant in the Army-led program and continues to support development of enhancements designed to increase availability of meteorological capability.

Fire Support Mods:

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
<p>Acoustic sensors: Maintain current acoustic capability while developing an integrated platform capable of transmitting digital information to AFATDS in support of artillery operations.</p> <p>AIM/FNC: Complete development of AIM/FNC to support a production contract.</p> <p>IPADS: Conduct engineering analysis of requirements to identify new technologies for future procurement.</p> <p>Legacy targeting systems: Conduct engineering analysis to identify product improvements to increase performance capabilities.</p> <p>Family of Internally Transportable Vehicles (FITV): The FITV program strategy is to develop solutions under the ongoing Nevada Automotive Test Center effort to address eighteen identified reliability and safety design issues through government off-the-shelf (GOTS), commercial off-the-shelf (COTS) or modified off-the-shelf (MOTS) components. The government will select from two potential component upgrade solutions for each of the eighteen deficiencies and conduct competition to procure and integrate modification kits, develop logistics products and conduct training.</p> <p>Conventional Ground Ammunition: The Conventional Ground Ammunition strategy is to invest in Insensitive Munitions (IM) technologies to address IM shortfalls of priority programs identified in the bi-annual Marine Corps Insensitive Munitions Strategic Plan (IMSP). Once the IM technologies have been successfully demonstrated and matured, the intent is to insert the new technologies into new conventional ground ammunition development as well as provide opportunities to improve legacy munitions IM characteristics. The IM R&D effort directly addresses the mandated OSD requirement to obtain incremental IM improvement in pursuit of becoming fully IM compliant to the maximum extent practicable.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206623M / MC Ground Cmbt Spt Arms Sys				3098 / Fire Support System							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Cumulative Funding	Various	Various : Various	81.913	0.000		0.000		0.000		-		0.000	0.000	81.913	-
FITV Rollover Protection Mod	C/FFP	NATC : Carson City, NV	0.147	0.000		0.000		0.000		-		0.000	0.000	0.147	-
Fire Support Mod	WR	NAVSEA : Washington, DC	0.000	1.176	Jan 2015	0.000		0.000		-		0.000	0.000	1.176	-
FAM Capability Enhancement	WR	NSWC Safety : Dahlgren, VA	0.000	0.131	Jan 2015	0.000		0.000		-		0.000	0.000	0.131	-
Fire Support Mods	MIPR	PM Mission Command : Aberdeen, MD	0.679	0.000		0.000		0.000		-		0.000	0.000	0.679	-
Fire Support Mods	WR	NAVSEA : Washington, DC	0.000	0.440	Apr 2015	0.000		0.000		-		0.000	0.000	0.440	-
PERM TFT Development	MIPR	U.S. Army Armament : Picatinny, NJ	0.000	0.000		0.000		0.337	Jan 2017	-		0.337	0.000	0.337	-
Conventional Ground Ammunition	MIPR	ARDEC : Picatanny, NJ	0.822	0.200	Jan 2015	0.250	Jan 2016	0.245	Jan 2017	-		0.245	0.000	1.517	-
FITV Engineering Programmatic Support	Various	Various : Various	0.060	0.000		0.350	Nov 2015	0.253	Nov 2016	-		0.253	Continuing	Continuing	Continuing
EFSS (PERM)	C/CPFF	Various : Contractors	18.253	1.186	Dec 2014	0.000		0.000		-		0.000	0.000	19.439	-
Conventional Ground Ammunition	MIPR	U.S. Army Armament : Picatinny, NJ	0.000	0.263	Jan 2015	0.250	Jan 2016	0.225	Jan 2017	-		0.225	0.000	0.738	-
Fire Support Mods	MIPR	ARDEC : Picatinny, NJ	0.000	0.000		0.500	Jan 2016	0.000		-		0.000	0.000	0.500	-
Conventional Ground Ammunition	C/FFP	NSWC : Indian Head, MD	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
Fire Support Mods	WR	NSWC : Dahlgren, VA	0.000	0.000		0.400	Jan 2016	1.099	Jan 2017	-		1.099	0.000	1.499	-
EFSS (PERM LRIP)	C/FFP	TBD : TBD	0.000	3.705	Dec 2015	7.557	Dec 2015	0.000		-		0.000	0.000	11.262	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fire Support Mods	MIPR	Army Research Lab : Adelphi, MD	11.009	0.000		0.000		0.000		-		0.000	0.000	11.009	-
MMIM	MIPR	Army Research Lab : Adelphi, MD	0.186	0.210	Dec 2014	0.000		0.242	Jan 2017	-		0.242	0.000	0.638	-
Subtotal			113.369	7.311		9.307		2.401		-		2.401	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EFSS & PERM Safety Support	WR	NSWC : Dahlgren, Va	0.000	0.100	Nov 2014	0.175	Dec 2015	0.000		-		0.000	0.000	0.275	-
EFSS, PERM Engineeing Support	WR	NSWC : Dahlgren, Va	0.000	0.394	Nov 2014	0.788	Dec 2015	0.000		-		0.000	0.000	1.182	-
EFSS & PERM FSS Support	SS/CPFF	TBD : TBD	0.000	0.243	Apr 2015	0.000		0.000		-		0.000	0.000	0.243	-
Fire Support Mods	WR	SPAWAR : Charleston, SC	0.175	0.000		0.000		0.000		-		0.000	0.000	0.175	-
Prior Years Cumulative Funding	Various	Various : Various	0.387	0.000		0.000		0.000		-		0.000	0.000	0.387	-
MMIM	WR	ARDEC : Picatinny	0.000	0.000		0.261	Jan 2016	0.000		-		0.000	0.000	0.261	-
Fire Support Mods	MIPR	ARDEC : Picatinny, NJ	0.000	0.000		0.275	Jan 2016	0.000		-		0.000	0.000	0.275	-
Fire Support Mods	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.215	Jan 2016	0.000		-		0.000	0.000	0.215	-
FAM Engineering Support	WR	NSWC : Dahlgren, Va	2.009	0.153	Apr 2015	0.310	Mar 2016	0.310	Mar 2017	-		0.310	0.000	2.782	-
Subtotal			2.571	0.890		2.024		0.310		-		0.310	0.000	5.795	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FAM	MIPR	Aberdeen : Aberdeen, MD	0.631	0.000		0.000		0.000		-		0.000	0.000	0.631	-
Fire Support Mods	MIPR	Army Research Lab : Adelphi, MD	0.425	0.000		0.000		0.000		-		0.000	0.000	0.425	-
MMIM	MIPR	Army Research Lab : Adelphi, MD	0.479	0.000		0.000		0.000		-		0.000	0.000	0.479	-
Prior Year Cumulative Funding: Fire Support Mods	Various	Various : Various	7.014	0.000		0.000		0.000		-		0.000	0.000	7.014	-
EFSS (PERM)	WR	NSWCDD : Dahlgren, VA	4.379	1.006	Nov 2014	0.000		2.531	Dec 2016	-		2.531	0.000	7.916	-
Subtotal			12.928	1.006		0.000		2.531		-		2.531	0.000	16.465	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EFSS (PERM)	C/FFP	SEAPORT : Quantico, VA	0.000	0.000		0.209	Apr 2016	0.000		-		0.000	0.000	0.209	-
Fire Support Mods	C/FFP	SEAPORT : Quantico, VA	0.317	0.000		0.400	Mar 2016	0.000		-		0.000	0.000	0.717	-
Subtotal			0.317	0.000		0.609		0.000		-		0.000	0.000	0.926	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	129.185	9.207	11.940	5.242	-	5.242	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System
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Proj 3098	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021								
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q					
EFSS - PERM	DEMO				MS C/LRIP ▲					FAT				PRR 1 ◆																			
													FRP DR ▲																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 3098 / Fire Support System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3098				
EFSS - PERM: DEMO	1	2015	3	2015
EFSS - PERM: MS C/LRIP	1	2016	1	2016
EFSS - PERM: PRR 1	2	2018	2	2018
EFSS - PERM: FAT/TYPE QUAL/USER TEST	3	2017	1	2018
EFSS - PERM: FRP DR	2	2018	2	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys				Project (Number/Name) 4002 / Family of Raid Reconnaissance			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
4002: <i>Family of Raid Reconnaissance</i>	3.285	0.479	0.504	0.449	-	0.449	0.546	0.545	0.535	0.548	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project supports multiple airborne/parachuting and specialized reconnaissance related programs focusing on immediate capability enhancements to numerous insertion and personnel equipment shortfalls currently existing in reconnaissance units throughout the operating forces; such as improving airborne capability equipment and items for direct action missions that use specialized raid equipment.

Name change from PB16 to PB17: Family of Raids/Reconnaissance Equipment (FRRE) to Airborne Reconnaissance Equipment (ARE).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Airborne Reconnaissance Equipment (ARE) - formerly Family of Raids/Reconnaissance Equipment (FRRE)	0.282	0.395	0.347	0.000	0.347
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Continued technology upgrades and evaluation of emerging reliability challenges presented by fielded systems, such as Automatic Activation Device and system safety verification.					
FY 2016 Plans:					
- Continue technology upgrades and evaluation of emerging reliability challenges presented by fielded systems, such as Automatic Activation Device and system safety verification.					
- Initiate research and development on personnel parachute and aerial delivery fielded programs, to parachute performance testing.					
FY 2017 Base Plans:					
- Continue technology upgrades and evaluation of emerging reliability challenges presented by fielded systems, such as Automatic Activation Device and system safety verification.					
- Continue research and development on personnel parachute and aerial delivery fielded programs, such as parachute performance testing.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 4002 / Family of Raid Reconnaissance

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Underwater Reconnaissance Capability (URC)	0.197	0.109	0.102	0.000	0.102
Articles:	-	-	-	-	-
FY 2015 Accomplishments: - Continued test and evaluation of new Combatant Rubber Raiding Craft (CRRC) technology. - Initiated research and development efforts on improved amphibious support equipment to fulfill URC.					
FY 2016 Plans: - Complete test and evaluation of new Combatant Rubber Raiding Craft (CRRC) technology. - Continue research and development efforts on improved amphibious support equipment; to include evaluation of the Diver Propulsion Device (DPD) upgrades to support the propulsion solution to the DRV to fulfill URC.					
FY 2017 Base Plans: - Continue research and development efforts on improved amphibious support equipment to fulfill URC, to include battery development and testing.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.479	0.504	0.449	0.000	0.449

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/6518: Amphibious Support Equipment	4.354	3.235	7.371	-	7.371	5.914	4.807	4.906	5.004	Continuing	Continuing

Remarks

D. Acquisition Strategy

(U) Airborne Reconnaissance Equipment (ARE) acquisition strategy is to fund engineering changes and product upgrade testing and development for various reconnaissance special purpose equipment for aerial delivery and parachuting, such as the Parachutist's High Altitude Oxygen System (PHAOS); Automatic Activation Device (AAD); and the Tandem Offset Resupply Delivery System (TORDS)/Military Tandem Tethered Bundle (MTTB) System.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 4002 / Family of Raid Reconnaissance

(U) Underwater Reconnaissance Capability (URC) acquisition strategy for the underwater capabilities program consists of a multi-step to full capability approach. Using a tradeoff source selection process, a full and open competition will be executed for a commercial material solution. A single Firm Fixed Price (FFP) IDIQ contract will be awarded for the acquisition of the underwater reconnaissance propulsion capabilities systems, associated training, and Initial Issue Provisioning (IIP) Package.

E. Performance Metrics

Milestone reviews.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys					Project (Number/Name) 4002 / Family of Raid Reconnaissance				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year cumulative funding	Various	Various : Various	1.680	0.000		0.000		0.000		-		0.000	0.000	1.680	-
Airborne Recon Equipment	MIPR	US Army RDECOM : Natick, MA	0.377	0.000		0.008	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Airborne Recon Equipment	WR	NSWC : Carderock, MD	0.000	0.100	Feb 2015	0.000		0.000		-		0.000	0.000	0.100	-
Airborne Recon Equipment	WR	Naval Air Systems : China Lake, CA	0.000	0.000		0.123	Feb 2016	0.000		-		0.000	0.000	0.123	-
Airborne Recon Equipment	WR	TBD : TBD	0.000	0.000		0.034	Apr 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Airborne Recon Equipment	MIPR	Yuma Test Center : Yuma, AZ	0.000	0.182	Jan 2015	0.030	Mar 2016	0.147	Mar 2017	-		0.147	Continuing	Continuing	Continuing
Underwater Recon Capability	WR	NSWC : Carderock, MD	0.000	0.197	Feb 2015	0.030	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Underwater Recon Capability	WR	TBD : TBD	0.000	0.000		0.079	Mar 2016	0.102	Feb 2017	-		0.102	Continuing	Continuing	Continuing
Subtotal			2.057	0.479		0.304		0.249		-		0.249	-	-	-

Remarks
Name change from PB16 to PB17: Family of Raids/Reconnaissance Equipment (FRRE) to Airborne Reconnaissance Equipment (ARE).

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year cumulative funding	Various	Various : Various	1.146	0.000		0.000		0.000		-		0.000	0.000	1.146	-
Airborne Recon Equipment	MIPR	US Army RDECOM : NATICK, MA	0.000	0.000		0.200	Nov 2015	0.200	Mar 2017	-		0.200	Continuing	Continuing	Continuing
Subtotal			1.146	0.000		0.200		0.200		-		0.200	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 4002 / Family of Raid Reconnaissance
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Proj 4002	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Tech upgrades																												
R&D parachutes																												
Empty grid for data entry																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206623M / MC Ground Cmbt Spt Arms Sys	Project (Number/Name) 4002 / Family of Raid Reconnaissance

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4002				
Tech upgrades	1	2015	4	2021
R&D parachutes	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	210.309	18.184	19.955	13.194	-	13.194	15.118	16.425	13.670	13.963	Continuing	Continuing
0201: Logistical Veh Sys Replacement (LVSR)	36.586	0.292	0.261	0.264	-	0.264	0.235	0.208	0.212	0.216	Continuing	Continuing
2316: Combat Service Support Eng Equip	65.572	6.993	4.655	4.984	-	4.984	8.203	8.223	7.461	7.621	Continuing	Continuing
2509: Motor Transport Mod	39.842	3.735	1.318	1.578	-	1.578	1.195	1.205	1.233	1.260	Continuing	Continuing
2510: MAGTF CSSE & SE	16.827	4.560	9.153	5.090	-	5.090	3.854	4.880	3.998	4.085	Continuing	Continuing
2929: Testing Measuring Diag Equip & SE	8.017	0.834	0.502	0.538	-	0.538	0.574	0.614	0.627	0.640	Continuing	Continuing
9C90: MTRV Mod	43.465	1.770	4.066	0.740	-	0.740	1.057	1.295	0.139	0.141	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) provides funding for Marine Air-Ground Task Force requirements for Combat Service Support equipment improvement. It will enhance combat breaching capabilities of the ground combat elements, logistics, maintenance and transportation. The PE also provides improvements in all areas of Combat Service Support Equipment Vehicles by determining the replacement for the light fleet of vehicles. This includes projects such as: Alternative Power Sources for Communications Equipment (APSCE) which is a suite of devices that provide the commander with the capability to use existing power to operate his communication equipment, computers and peripheral equipment instead of using batteries or fossil fuel generators; the Marine Corps Family of Automatic Test Systems (ATS), formerly TETS, which provides automatic testing capability for use by technicians both in garrison and forward edge of the battlefield; improvements in all areas of the M1A1 main battle tank, LVSR & MTRV; the High Performance Capabilities for Military Vehicles Project which is dedicated to applying the best practices of the motor sports industry to military vehicles including engineering expertise, equipment and technology.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	20.999	20.729	17.373	-	17.373
Current President's Budget	18.184	19.955	13.194	-	13.194
Total Adjustments	-2.815	-0.774	-4.179	-	-4.179
• Congressional General Reductions	-	-0.028			
• Congressional Directed Reductions	-	-0.746			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.337	0.000			
• SBIR/STTR Transfer	-0.477	0.000			
• Program Adjustments	0.000	0.000	-0.300	-	-0.300
• Rate/Misc Adjustments	-0.001	0.000	-3.879	-	-3.879

Change Summary Explanation

The \$6.761M reduction from FY16 to FY17 is due to the completion of Mobile Electric Hybrid Power Sources (MEHPS) testing in support of Advanced Power Sources, attainment of the Medium Transport Vehicle Replacement Modification AAO and continued transition of the program into the sustainment phase and decreased testing requirements for Micro-Grid evaluation for Mobile Power Equipment.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt				Project (Number/Name) 0201 / Logistical Veh Sys Replacement (LVSR)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0201: <i>Logistical Veh Sys Replacement (LVSR)</i>	36.586	0.292	0.261	0.264	-	0.264	0.235	0.208	0.212	0.216	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Logistics Vehicle System Replacement (LVSR) is the USMC Marine Air-Ground Task Force (MAGTF) Heavy Lift Capability system. The Medium/Heavy Modification line funds numerous modifications and initiatives that are required to address operational priorities, engineering change proposals, safety concerns, support equipment inefficiencies, tool malfunctions, product quality deficiencies, and other issues that effect vehicle reliability, availability, maintainability and readiness. A proactive and focused approach ensures proper vehicle sustainment and life cycle management, and it allows the flexibility to develop and implement improvements as needed to respond to the evolving needs of the Marine Corps.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	0.000	0.131	0.132	0.000	0.132
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: -Continue to support safety & Engineering Change Proposal (ECP) development required to meet the diverse environments of current and future operations of Marine Air Ground Task Force (MAGTF) Expeditionary Maneuver Warfare as continual changes in threat environment requires an on-going and proactive approach.					
FY 2017 Base Plans: -Continue to support safety modification development and ECP development required to meet the diverse environments of current and future operations of MAGTF Expeditionary Maneuver Warfare as continual changes in threat environment requires an on-going and proactive approach.					
FY 2017 OCO Plans: N/A					
Title: Support	0.000	0.130	0.132	0.000	0.132
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 0201 / Logistical Veh Sys Replacement (LVSR)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: -Initiate ECP support safety required to meet the diverse environments of current and future operations of MAGTF Expeditionary Maneuver Warfare. Incorporating new safety upgrades that will protect the warfighter and LVSR vehicle from possible catastrophic events as warranted by continual changes in threat environment.					
FY 2017 Base Plans: -Continue to provide engineer change support and safety support required to meet the diverse environments of current and future operations of MAGTF Expeditionary Maneuver Warfare as continual changes in threat environment requires an on-going and proactive approach.					
FY 2017 OCO Plans: N/A					
Title: Test and Evaluation	0.292	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Continued testing events to support safety & ECP development required to meet the diverse environments of current and future operations of MAGTF Expeditionary Maneuver Warfare.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.292	0.261	0.264	0.000	0.264

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/5230: Motor Transport Modifications	4.418	6.938	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 0201 / Logistical Veh Sys Replacement (LVSR)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PMC/5050: Logistics Vehicle System Replacement	0.464	2.310	1.768	-	1.768	1.347	1.962	2.011	2.050	Continuing	Continuing

Remarks

Motor Transport Modifications transferred from BLI 5230 to 5050 starting in FY17.
LVSR portion of PMC BLI 5050 IS ASSOCIATED WITH LVSR C0201

D. Acquisition Strategy

The Logistics Vehicle System Replacement (LVSR) program used a two-phase, single-step acquisition approach rather than an evolutionary acquisition approach. Phase I developed the Cargo variant and Phase II developed the Tractor and Wrecker variants. The program is currently in sustainment utilizing RDT&E funding to address required Engineering Change Proposals (ECPs) to maintain relevancy on the battlefield and implement system requirements.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt				Project (Number/Name) 0201 / Logistical Veh Sys Replacement (LVSR)							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LVSR Safety Mod Development	SS/FFP	Various : Various	1.796	0.000		0.066	Oct 2015	0.066	Jun 2017	-		0.066	Continuing	Continuing	Continuing
LVSR ECP Development	SS/FFP	Various : Various	1.050	0.000		0.065	Apr 2016	0.066	Jun 2017	-		0.066	0.000	1.181	-
Prior Years Cumulative Funding	C/FFP	Various : Various	17.398	0.000		0.000		0.000		-		0.000	0.000	17.398	-
Subtotal			20.244	0.000		0.131		0.132		-		0.132	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LVSR Engineer Change Support	SS/FFP	Various : Various	0.743	0.000		0.130	May 2016	0.132	Jun 2017	-		0.132	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	1.648	0.000		0.000		0.000		-		0.000	0.000	1.648	-
Subtotal			2.391	0.000		0.130		0.132		-		0.132	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LVSR ECP Testing	MIPR	ATC : Aberdeen, MD	0.000	0.292	Oct 2015	0.000		0.000		-		0.000	0.000	0.292	-
Prior Years Cumulative Funding	Various	Various : Various	11.004	0.000		0.000		0.000		-		0.000	0.000	11.004	-
Subtotal			11.004	0.292		0.000		0.000		-		0.000	0.000	11.296	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 0201 / <i>Logistical Veh Sys Replacement (LVSR)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0201				
Safety Mod Development	1	2016	4	2021
Engineering Change Proposal (ECP) Development	1	2016	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>				Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2316: <i>Combat Service Support Eng Equip</i>	65.572	6.993	4.655	4.984	-	4.984	8.203	8.223	7.461	7.621	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M1A1 Mod Kit effort includes improvements in all areas of the M1A1 main battle tank and the Armored Vehicle Launched Bridge (AVLB). The M1A1 tank provides armor protected firepower to the USMC ground combat element. Efforts under the mod line pertaining to the M1A1 include improvements such as lethality systems to increase armament accuracy, increase the crew's situational awareness through sensor enhancements and intra-vehicular data sharing, providing for off-board targeting improvement, and environmental testing of components. The AVLB provides the Marine Corps only armor-protected assault gap crossing capability. Continued funding is required to address obsolescence and address operational deficiencies to adapt the tank and AVLB to a changing operational environment and support user-defined product improvements. These improvements directly address Marine Corps Lessons Learned, after action reports, and will ensure maximum survivability, sustainability, and readiness. Funds increased from FY16 to FY17 reflect completion of prior development projects and the initiation of required obsolescence mitigation.

The Engineer Mods and Tool Kits line funds modifications and initiatives which are required to address operational priorities, engineering change proposals, safety concerns, support equipment inefficiencies, product quality deficiencies and other issues that affect vehicle reliability, availability and readiness. This approach ensures proper vehicle sustainment and life cycle management in response to evolving needs of the Marine Corps fleet. Operational needs to provide personnel survivability on engineer equipment is essential to current and future operations. Research and development funding develops and integrates new lighter, compact armor technology and supports ballistic testing for applications to existing and future acquisitions.

Corrosion Prevention and Control (CPAC): The useful life of Marine Corps assets will be extended through a comprehensive CPAC RDT&E program aimed at identifying and certifying new corrosion control products, materials, processes and procedures for legacy and new acquisition. The CPAC RDT&E Program works to standardize and substantially improve strategies, objectives and processes to prevent, detect, and treat corrosion and its effects on Marine Corps ground vehicles and weapons systems. This mission responds to the Congressional directives and DoD and SECNAV instruction to reduce the negative operational effects and associated total ownership cost of Marine Corps ground vehicles and weapons systems.

The Mine Resistant Ambush Protected (MRAP) Family of Vehicles (FoV) provides tactical mobility for Warfighters with multi-mission vehicles designed to support urgent operational needs and protect personnel from the effects of improvised explosive devices (IEDs), underbody mines, and small arms fire threats. Multiple vehicle categories (CATs) have been procured, fielded, and sustained: MRAP-All Terrain Vehicle (M-ATV) - Combat operations (ops) in rural, mountainous, urban terrain. Category I - Urban combat operations, ambulance. Category II - Multi-mission ops-convoy lead, troop transport, ambulance, utility vehicle. Category III - Mine/IED clearance ops, explosive ordnance disposal. Operational needs to provide personnel survivability is essential to current and future operations. Research and development funding develops and integrates new armor technology and supports ballistic testing.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Engineer Mods and Tool Kits</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Initiated support work for Matting application in support of the Engineer Family of Systems. -Initiated project management design and integration efforts supporting Route Reconnaissance and Clearance (R2C) Capability Set Integration Kits.</p> <p>FY 2016 Plans: -Continue support work for Matting applications in support of the Engineer Family of Systems. -Complete project management design and integration efforts supporting Route Reconnaissance and Clearance (R2C) Capability Set Integration Kits.</p> <p>FY 2017 Base Plans: -Initiate new Engineer Change Proposals in support of the Engineer Family of Systems.</p> <p>FY 2017 OCO Plans: N/A</p>	0.437	0.634	0.479	0.000	0.479
	-	-	-	-	-
<p>Title: M1A1 Modifications</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to identify and develop upgrades to the M1A1 turret to include obsolescence mitigation, lethality, and survivability enhancement and evaluate broader platform modernization needs.</p> <p>FY 2016 Plans: Complete the research and development effort for AIDATS and begin other development efforts such as the Radio Communication Integration upgrade.</p> <p>FY 2017 Base Plans: Begin obsolescence mitigation and upgrade development for the Firepower Enhancement Program (FEP) and upgrade the advanced gunnery training system with the most current capabilities. Increase of \$0.235M is due to shift from AIDATS integration to FEP performance increase.</p> <p>FY 2017 OCO Plans:</p>	2.618	1.084	1.319	0.000	1.319
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Mine Resistant Ambush Protected Family of Vehicles</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Initiated research, development and ballistic testing associated with Engineering Change Proposals (ECP) such as survivability and mobility upgrades.</p> <p>FY 2016 Plans: Continue research and development of Engineering Change Proposals (ECPs) and armor ballistic testing in support of survivability and mobility upgrades.</p> <p>FY 2017 Base Plans: Continue research and development of Engineering Change Proposals (ECPs) and armor ballistic testing in support of survivability and mobility upgrades. Increase in funding from FY16 to FY17 of \$0.463M supports new test events.</p> <p>FY 2017 OCO Plans: N/A</p>	1.065	0.126	0.589	0.000	0.589
	-	-	-	-	-
<p>Title: Corrosion Prevention and Control (CPAC)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued and increased the identification of new corrosion control products, materials, processes and procedures and continues to impact Marine Corps corrosion control processes through Science and Technology initiatives in some of the following areas: Thermally Sprayed Metal Coatings (TSMC) for Corrosion Protection of Areas Subject to Wear, Compatibility of Chemical Agent Resistant Coating (CARC) Systems During Re-Paint, Chip Resistant, Flexible Nonslip Coatings and Corrosion Resistant Insulating Foams. Along with stewardship of the Corrosion Products, Processes and Materials project for vendor submissions to the Marine Corps and product qualification for chip and abrasion resistant coatings.</p> <p>FY 2016 Plans: Continue and increase the identification of new corrosion control products, materials, processes and procedures that impact Marine Corps corrosion control processes through Science and Technology initiatives in some of the following areas: Thermally Sprayed Metal Coatings (TSMC) for Corrosion Protection of Areas Subject to Wear,</p>	2.873	2.811	2.597	0.000	2.597
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Compatibility of Chemical Agent Resistant Coating (CARC) Systems During Re-Paint, Chip Resistant, Flexible Nonslip Coatings and Corrosion Resistant Insulating Foams. Along with stewardship of the Corrosion Products, Processes and Materials project for vendor submissions to the Marine Corps and product qualification for chip and abrasion resistant coatings and other Corrosion Prevention Compounds that retard/arrest corrosion.</p> <p>FY 2017 Base Plans: Continue and increase the identification of new corrosion control products, materials, processes and procedures that impact Marine Corps corrosion control processes through Science and Technology initiatives in some of the following areas: Thermally Sprayed Metal Coatings (TSMC) for Corrosion Protection of Areas Subject to Wear, Compatibility of Chemical Agent Resistant Coating (CARC) Systems During Re-Paint, Chip Resistant, Flexible Nonslip Coatings and Corrosion Resistant Insulating Foams. Along with stewardship of the Corrosion Products, Processes and Materials project for vendor submissions to the Marine Corps and product qualification for chip and abrasion resistant coatings and other Corrosion Prevention Compounds that retard/arrest corrosion to include evaluation of Advanced CARC systems..</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	6.993	4.655	4.984	0.000	4.984

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/6670: <i>Items Less than \$5M - CPAC & Eng Mods & Tool Kits</i>	4.663	4.322	4.342	-	4.342	4.406	4.644	4.740	4.831	Continuing	Continuing
• PMC/2061: <i>M1A1 Modification Kit</i>	18.034	11.528	12.577	-	12.577	14.837	15.162	15.268	15.565	Continuing	Continuing
• PMC/6520: <i>EOD Systems - MRAP</i>	0.243	0.047	0.346	-	0.346	1.149	1.211	1.235	1.259	Continuing	Continuing
• PMC/7000: <i>M1A1 Modification Kit</i>	0.000	2.090	4.380	-	4.380	0.361	0.000	0.000	0.000	0.000	6.831

Remarks

D. Acquisition Strategy

(U) The M1A1 modification kits program will leverage Army initiatives to the maximum extent and incorporate modifications to adapt Army solutions to the USMC environment. The USMC will research, develop, and evaluate programs to improve the survivability and lethality of the USMC tank. These efforts include the Abrams integrated Display and Targeting System, threat detection and warning, situational awareness, survivability, and ownership cost reduction work. M1A1 Mods will exercise

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>
<p>options on existing contracts of varying types to conduct research and analysis associated with the development of modifications and corrosion prevention to the M1A1 Tank and supporting platforms.</p> <p>(U) Engineer Mods and Tool Kits: This is a roll-up line of various engineering efforts, modifications and other related items less than \$5 Million each. This program provides for significant improvements to various pieces of engineering equipment by enhancing their capabilities and improving readiness.</p> <p>(U) Corrosion Prevention and Control (CPAC) Program: The Program will execute the RDT&E Program through direct allocation of funding to the Naval Surface Warfare Center - Carderock Division Corrosion Research and Engineering Branch for a comprehensive program aimed at identifying and certifying new corrosion control products, materials, processes and procedures for legacy and new acquisition.</p> <p>(U) Mine Resistant Ambush Protected (MRAP): The Program will execute RDT&E funds to research, develop, and evaluate survivability and mobility upgrades such as the Cougar Egress and Seat Survivability Upgrades. Work will be accomplished through options on existing contracts of varying types to conduct research and analysis associated with the development of modifications and modeling and simulation efforts through Naval Surface Warfare Center, Panama City.</p> <p>E. Performance Metrics N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2316 / Combat Service Support Eng Equip
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MRAP Modifications	WR	VARIOUS : VARIOUS	0.000	0.802	Apr 2015	0.000		0.188	Dec 2016	-		0.188	Continuing	Continuing	Continuing
M1A1 Modifications	C/FFP	MCSC : Quantico, VA	0.000	2.556	Mar 2015	0.000		0.400	Mar 2017	-		0.400	0.000	2.956	-
MRAP Engineering	WR	NSWC : Panama City, FL	2.212	0.000		0.126	Dec 2015	0.126	Dec 2016	-		0.126	Continuing	Continuing	Continuing
M1A1 Modifications	WR	SPAWAR : Charleston, SC	0.337	0.000		0.213	Jan 2016	0.000		-		0.000	0.000	0.550	-
M1A1 Modifications	MIPR	PM TRASYS : Orlando, FL	3.177	0.000		0.000		0.919	Jan 2017	-		0.919	0.000	4.096	-
M1A1 Modifications	MIPR	ABERDEEN PROVING GROUND : Aberdeen, MD	2.988	0.000		0.250	Jan 2016	0.000		-		0.000	0.000	3.238	-
M1A1 Modifications	MIPR	Picatiny Arsenal : Picatiny, NJ	1.174	0.000		0.383	Jan 2016	0.000		-		0.000	0.000	1.557	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	41.030	0.000		0.000		0.000		-		0.000	0.000	41.030	-
M1A1 Modifications	MIPR	NVL : Fort Belvoir, VA	0.000	0.062	Jan 2015	0.238	Jan 2016	0.000		-		0.000	0.000	0.300	-
Subtotal			50.918	3.420		1.210		1.633		-		1.633	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Cumulative Funding	Various	Various : various	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
CPAC	C/FFP	NSWC-CD : Bethesda, MD	0.000	1.303	Dec 2014	1.155	Dec 2015	1.000	Dec 2016	-		1.000	0.000	3.458	-
Subtotal			0.300	1.303		1.155		1.000		-		1.000	0.000	3.758	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>

Proj 2316	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
MRAP: Mobility and Survivability Upgrades and Engineering Support																												
Empty grid for data entry																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2316 / <i>Combat Service Support Eng Equip</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2316				
Mobility and Survivability Upgrades and Engineering Support	1	2015	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt				Project (Number/Name) 2509 / Motor Transport Mod			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2509: Motor Transport Mod	39.842	3.735	1.318	1.578	-	1.578	1.195	1.205	1.233	1.260	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Marine Corps Tactical Motor Transport Modification (MTM) project manages procurement and life cycle sustainment for more than 40,000 principle end items divided among four fleets: Light Fleet, Medium Fleet, Heavy Fleet, and Special Fleet. A sustained effort is maintained in the Marine Corps for development and testing in support of fleet Service Life Extension Program (SLEP) initiatives, vehicle quality deficiency resolutions, safety initiatives, environmental/state transportation mandated vehicle changes, and system component refresh modifications efforts. Since transportation asset operational availability declines at a steady rate over time, SLEP, fleet overhauls, and enhanced depot level modifications are essential in maintaining a viable transportation capability in the Marine Corps Operating Forces.

The M88A2 HERCULES project includes improvements in all areas of the M88A2 HERCULES vehicle. Continued funding is required to address obsolescence and support pre-planned product improvements. In addition, lessons learned will be implemented and used to develop safety related Engineering Change Proposals (ECPs) to correct hazards noted during the standard day to day operation of the M88A2 Improved Recovery Vehicle.

The HMMWV Sustainment Modification Initiative (SMI) program was cancelled effective FY 2016. FY 2015 funding supported engineering studies and analysis to evaluate the vehicle performance, safety and reliability. This program does not have funding beyond the FY15 HMMWV project. Future Legacy HMMWV safety and reliability efforts will be funded as a part of the Motor Transport Modification project 2509.

P-19 Replacement (P-19R) will replace the aging A/S32P-19A Crash Fire Rescue fleet in support of expeditionary airfield operations and the supporting establishment. The vehicle will be outfitted with advanced fire suppression equipment and provide rescue and aircraft fire fighting capabilities to permanent and expeditionary airfields throughout the Marine Corps. The P-19 Replacement may also be employed to fight structure fires in support of base camps and as firefighting support to other elements of the Marine Air Ground Task Force (MAGTF), such as ammunition supply points, Petroleum, Oil, and Lubricant (POL) distribution points, or hazardous material storage facilities.

The Family of Trailers & Ancillary Equipment program will explore options for "lightening the Marine Air Ground Task Force (MAGTF)" weight and cube attributes of the light and medium/heavy trailer fleet. Seeking technologies and other current and emerging options that can be employed to achieve optimum lift capability while constrained to the desired weight and cube. Transportation and expeditionary goals will be considered in the research and development phase for the trailer fleet. Will develop long-term modernization plans for the medium and heavy trailers within the Marine Corps to address operating safety enhancements, mission maintainability enhancements, and crew ergonomic improvements.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: M88A2 HERCULES	0.192	0.305	0.333	0.000	0.333

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2509 / Motor Transport Mod

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to develop long-term modernization plans for the M88A2 within the Marine Corps to address operating safety enhancements, maintainability enhancements, and crew ergonomic improvements.</p> <p>FY 2016 Plans: Initiate the development of modifications for the M88A2 and supporting equipment to increase Reliability, Availability, and Maintainability (RAM), decrease operating costs, and address obsolescence, crew ergonomics, Command and Control improvements, increase towing capacity to address supported platform weight growth.</p> <p>FY 2017 Base Plans: Continue the development of modifications for the M88A2 and supporting equipment to increase Reliability, Availability, and Maintainability (RAM), decrease operating costs, and address obsolescence, crew ergonomics, Command and Control improvements, increase towing capacity to address supported platform weight growth</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: High Mobility Multipurpose Wheeled Vehicle ECV (HMMWV-ECV)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Performed engineering studies and analysis to evaluate the vehicle performance, safety and reliability. Efforts focused on developing improvements to vehicle performance, safety and reliability.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.679	0.000	0.000	0.000	0.000
<p>Title: P-19 Replacement</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	0.922	0.172	0.326	0.000	0.326

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2509 / <i>Motor Transport Mod</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continued testing of the P-19R in support of Low Rate Initial Production (LRIP) and Full Rate Production (FRP). FY 2016 Plans: -Continue testing of the P-19R in support of FRP. -Initiate development of system modifications that include (1) Auxiliary Power Unit (APU) phase I and test 10KW (kilowatt) for Engineering Change Proposals (ECP's); (2) APU and Heating Ventilation Air Conditioning (HVAC) phase II for ECP's. FY 2017 Base Plans: Continue to develop, test, and integrate system modifications to improve vehicle performance and correct deficiencies identified on P-19 Replacement in support of FRP. System modifications include: (1) APU phase I and test 10kW for ECP's; (2) APU and HVAC phase II for ECP's. The 10 kW APU will allow the vehicle crew to operate the HVAC independent of the primary engine. This will result in fuel consumption savings as well as reduced maintenance on the primary engine. FY 2017 OCO Plans: N/A					
Title: Motor Transport Modification (MTM) Articles:	0.099 -	0.108 -	0.724 -	0.000 -	0.724 -
FY 2015 Accomplishments: Evaluated, tested, and integrated system modifications to improve vehicle performance and correct deficiencies identified for application on Motor Transportation light, medium, and heavy tactical assets including testing in support of the Internally Transportable Vehicle (ITV). FY 2016 Plans: Continue to evaluate, test, and integrate system modifications to improve vehicle performance and correct deficiencies identified for application on Motor Transportation light, medium, and heavy tactical assets. FY 2017 Base Plans: Continue to evaluate, test, and integrate system modifications for the Legacy Light Tactical Vehicles to ensure effectiveness, improve vehicle safety, performance, and correct deficiencies identified for application on Motor Transportation Light Tactical assets, enabling the fleet to maintain mobility requirements. FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2509 / Motor Transport Mod

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Family of Trailers & Ancillary Equipment	1.843	0.733	0.195	0.000	0.195
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Continued reliability testing to ensure effectiveness of Light Tactical Trailers (LTT) with the High Mobility Multipurpose Wheeled Vehicle (HMMWV) fleet and also for the Medium/Heavy Tactical Trailers designed for the Medium Tactical Vehicle replacement (MTVR)/Logistical Vehicle System Replacement (LVSR), enabling the fleet to maintain mobility requirements. -Initiated development of off-road capability enhancement for the M870 in order to meet the LVSR performance envelope.					
FY 2016 Plans: Continue testing to ensure effectiveness of Light Tactical Trailers (LTT) with the High Mobility Multipurpose Wheeled Vehicle (HMMWV) fleet and also for the Medium/Heavy Tactical Trailers designed for the Medium Tactical Vehicle replacement (MTVR)/Logistical Vehicle System Replacement (LVSR), enabling the fleet to maintain mobility requirements.					
FY 2017 Base Plans: Continue testing to ensure effectiveness of the Medium/Heavy Tactical Trailers designed for the Medium Tactical Vehicle replacement (MTVR)/Logistical Vehicle System Replacement (LVSR), enabling the fleet to maintain mobility requirements. The FY16 to FY17 decrease (\$0.538M) is due to completion of testing to address MTVR Trailer safety and performance needs.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	3.735	1.318	1.578	0.000	1.578

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/5230-02: Motor T Mod	4.418	1.108	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	121.269
• PMC/5045: HMMWV	45.804	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	52.708

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2509 / <i>Motor Transport Mod</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/5097-01: <i>Family of Trailers & Ancillary Equipment</i>	0.173	3.157	2.691	-	2.691	1.936	3.159	3.226	3.289	Continuing	Continuing
• PMC/2061-01: <i>M88A2 HERCULES Mod</i>	5.767	2.640	2.673	-	2.673	2.728	2.781	2.838	2.894	Continuing	Continuing
• PMC/4630-01: <i>M88A2 HERCULES Mod</i>	0.156	0.162	0.164	-	0.164	0.167	0.170	0.173	0.176	Continuing	Continuing
• PMC/5097-02: <i>MTVR Trailers</i>	9.938	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	78.645
• PMC/5006-02: <i>P19R</i>	10.925	16.540	58.741	-	58.741	70.170	0.327	0.355	0.361	Continuing	Continuing
• PMC/5050-03: <i>Motor T Mod</i>	0.000	0.000	4.302	-	4.302	3.993	3.302	3.370	3.436	0.000	18.403

Remarks

D. Acquisition Strategy

The M88A2 HERCULES program leverages Army developmental projects to create a system that more readily meets Marine Corps Heavy Recovery Vehicle requirements. Improvements include Engineering Change Proposals addressing safety, reliability, and technology upgrades.

The HMMWV Sustainment Modification Initiative (SMI) program was cancelled effective FY 2016. FY 2015 funding supported engineering studies and analysis to evaluate the vehicle performance, safety and reliability. Efforts will be focused on developing improvements to vehicle performance, safety and reliability.

The P-19 Replacement leverages COTS and NDI components in an effort to minimize costs, test requirements, and reduce development time. P-19R will supplant the aging A/S32P-19A fleet in support of expeditionary airfield operations and the supporting establishment. The vehicle will be outfitted with advanced fire suppression equipment and provide rescue and aircraft fire fighting capabilities to permanent and expeditionary airfields throughout the Marine Corps. The P-19 Replacement may also be employed to fight structure fires in support of base camps and as firefighting support to other elements of the MAGTF, such as ammunition supply points, Petroleum, Oil, and Lubricants (POL) distribution points, or hazardous material storage facilities. A Firm Fixed Price (FFP) contract was awarded in May 2013 with step-ladder pricing for procurement of large quantities. The contract structure provides for production, testing, and training. A delivery order can be placed in any year for production quantities up to 200 vehicles.

Motor Transport Modification (MTM) funding will focus on streamlined acquisitions of Commercial-Off-The-Shelf/Non-Developmental Items (COTS/NDI) that can be identified, integrated, and tested in a short amount of time. MTM funding will be used for modifications required to increase MTM fleet readiness, safety and reliability. Successful modifications and tests are intended for follow-on procurement and incorporation into existing system component upgrades, SLEPs, or rapid COTS/NDI fielding for the Fleet Marine Forces (FMF).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2509 / <i>Motor Transport Mod</i>
<p>The Family of Trailers & Ancillary Equipment (FTT) management strategy will use RDT&E funding to explore current and new technological options that can be used to achieve optimum lift within the desired weight and cube constraints in support of the "Lightening the MAGTF" initiative, as well as sustaining and/or improving capabilities. Transportation and expeditionary goals will be considered in the research and development for the light and medium/heavy trailer fleet to include (but not limited to) the M1076 PLS (Palletized Load System) Trailer, MK1077 Flatrack, MTRV Trailer, M870 Ton Low Bed, Mk970 Tactical Refueler and the Flatrack Refueler Capability (FRC).</p> <p>E. Performance Metrics N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

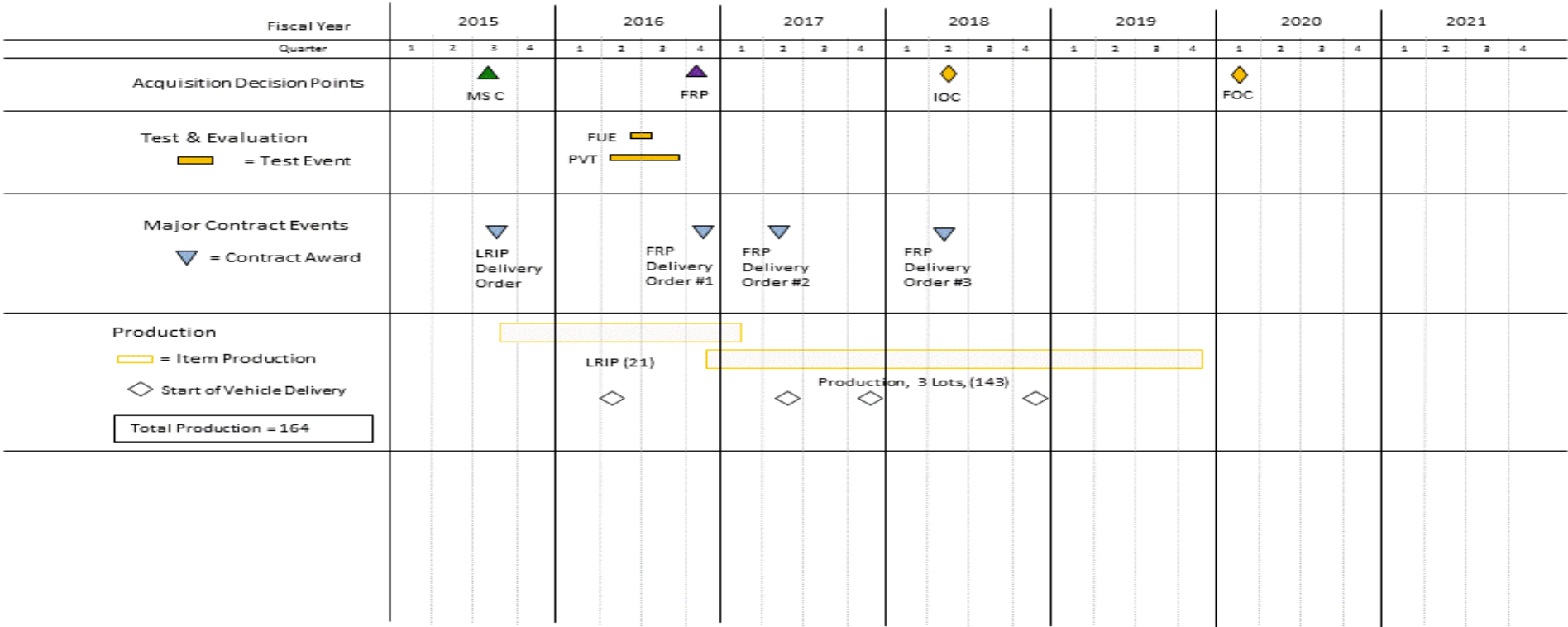
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2509 / Motor Transport Mod
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M88A2 HERCULES	MIPR	TACOM : Warren, MI	1.513	0.192	Feb 2015	0.305	Apr 2016	0.333	Apr 2017	-		0.333	Continuing	Continuing	Continuing
HMMWV HSMI Reconfiguration	C/FFP	NATC : Silver Springs, NV	0.000	0.396	Jun 2015	0.000		0.000		-		0.000	0.000	0.396	-
MTM (Heavy) Safety Testing	C/FFP	Oshkosh : Oshkosh, WI	0.000	0.058	Sep 2015	0.000		0.000		-		0.000	0.000	0.058	-
FTT (Medium) ECP Development	MIPR	NAMC : Warren, MI	0.000	0.000		0.185	Mar 2016	0.000		-		0.000	0.000	0.185	-
FTT (Heavy) ECP Development	MIPR	NAMC : Warren, MI	0.000	1.843	Jul 2015	0.000		0.000		-		0.000	0.000	1.843	-
FTT ECP Development	C/FFP	NATC : Carson City, CA	0.000	0.000		0.000		0.195	May 2017	-		0.195	Continuing	Continuing	Continuing
P-19 APU Development	WR	NSWC : Dahlgren, VA	0.000	0.000		0.000		0.161	Feb 2017	-		0.161	0.000	0.161	-
Prior Years Cumulative Funding	Various	Various : Various	28.127	0.000		0.000		0.000		-		0.000	0.000	28.127	19.769
Subtotal			29.640	2.489		0.490		0.689		-		0.689	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
P19 Developmental Testing	C/BA	NATC : Carson City, NV	0.000	0.461	Sep 2015	0.000		0.000		-		0.000	0.000	0.461	-
P19 Reliability Testing	C/BOA	NATC : Carson City, NV	0.000	0.461	Jun 2015	0.172	Jun 2016	0.165	May 2017	-		0.165	Continuing	Continuing	Continuing
MTM (Light) Safety Testing	MIPR	SPAWAR : Charleston, SC	0.000	0.041	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
FTT (Heavy) Reliability Testing	C/FFP	NATC : Carson City, NV	0.000	0.000		0.370	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
FTT (Medium) Testing	MIPR	ATC : Aberdeen, MD	0.000	0.000		0.178	Aug 2016	0.000		-		0.000	Continuing	Continuing	Continuing
MTM Engineering Support	TBD	TBD : TBD	0.000	0.000		0.000		0.724	Dec 2016	-		0.724	0.000	0.724	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
P-19R				
Aquisition Decision Points: Milestone C	3	2015	3	2015
Aquisition Decision Points: Full Rate Production Decision	3	2016	3	2016
Aquisition Decision Points: Initial Operating Capability	2	2018	2	2018
Aquisition Decision Points: Full Operating Capability	1	2020	1	2020
Test and Evaluation: Production Verification Testing	2	2016	3	2016
Test and Evaluation: Field User Evaluation (FUE)	2	2016	3	2016
Major Contract Events: Low Rate Initial Production Award	3	2015	3	2015
Major Contract Events: Full Rate Production Award #1	4	2016	4	2016
Major Contract Events: Full Rate Production Award #2	2	2017	2	2017
Major Contract Events: Full Rate Production Award #3	2	2018	2	2018
Production: Low Rate Initial Production	3	2015	1	2017
Production: Full Rate Production 1, 2 and 3	4	2016	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2510: <i>MAGTF CSSE & SE</i>	16.827	4.560	9.153	5.090	-	5.090	3.854	4.880	3.998	4.085	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Environmental Control Equipment, Mobile Power Equipment and Advanced Power Sources are a part of Expeditionary Energy Initiatives.

A. Mission Description and Budget Item Justification

Environmental Control Equipment:

The Enhanced Environmental Control Unit (E2CU) program is the second generation of a family of environmental control units from 9,000 BTU to 60,000 BTU/Hr cooling output. The E2CU program will provide tactical Heating, Ventilation and Air Conditioning (HVAC) and superior reliability for all MAGTF units in all operational concepts. E2CU will replace all legacy ECUs starting in 2014 in the following sizes: 9,000 BTU/Hr; 18,000 BTU/Hr. These higher reliability and higher efficiency sets will use EPA-approved refrigerants, will be more energy efficient, be more mobile, easier to repair, and quieter than their predecessors. A significant average fuel efficiency improvement over the current ECU family has been demonstrated. With environmental control systems consuming 50-70% of tactical electric power in theater, this savings will be a significant contribution to reducing the USMC fuel demand, and lightening the Marine Air-Ground Task Force (MAGTF). The Warfighter benefit includes a decreased logistics footprint, less reliance on petroleum-derived fuels, increased local energy security, and reduced tanker losses (fewer on the road). The operational imperative to reduce fuel usage will consequently reduce refueling operations and exposing Marines to hazardous fuel convoy operations.

The FY16 to FY17 funding increased by \$0.060M to evaluate field refrigeration units.

Mobile Power Equipment:

The Family of Mobile Electric Power Equipment consists of skid and trailer mounted tactical generators ranging from 2 to 200 kilowatts, Mobile Electric Power Distribution Systems, Load Banks, and Electrician's Tool Kits. This equipment is procured and fielded to provide electricity on the battlefield. Combat, combat support, and combat service support units all require tactical power to operate weapons systems, Command, Control, Communications, Computers and Intelligence (C4I) systems, medical and messing facilities, environmental control equipment, and water purification systems. With over 10,000 generators and using diesel engines in the Operating Forces, improving their fuel efficiency and reliability will be a significant contribution to reducing the USMC fuel demand, and lightening the MAGTF. The Warfighter benefit includes a decreased logistics footprint, less reliance on petroleum-derived fuels, increased local energy security, and reduced tanker losses (fewer on the road). The operational imperative to reduce fuel usage will consequently reduce refueling operations and exposing Marines to hazardous fuel convoy operations.

Efforts such as:

(1) Hybrid Generator: Funding to integrate new Advanced Medium Mobile Power Sources (AMMPS) 10kW Generator and energy storage devices onto a Light Tactical Trailer. Will provide capability to deliver 10kW steady state, supply up to 13kW peak demand for several hours using stored energy, and provide 3kW silent operations for several hours (battery only). Will transition into production of a unit that can be integrated with the AMMPS generator.

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(2) AMMPS Digital Control System evaluation to provide tactical general gridding capability that will provide greater flexibility and reduce fuel consumption of networked generators.

(3) Evaluation of large energy storage devices that will reduce generator run time and reduce fuel consumption of networked generators.

(4) 1kW Diesel Generator: Integration and product qualification testing of new 1kW diesel generator for USMC-unique applications. Generator procurement will be by customers on a DoD contract.

The FY16 to FY17 funding decreased by \$1.134M due to decreased testing requirements for Micro-Grid evaluation.

Advanced Power Sources:

The Advanced Power Sources efforts will focus on achieving the Marine Corps goal of lightening the MAGTF and the individual Marine combat load through reduced battery weight and logistical fuel resupply needs. The Mobile Electric Hybrid Power System (MEHPS) and Medium Hybrid Expeditionary Energy Systems (MHEES) will focus on hybrid power systems capable of improved fuel efficiency and silent operations in the 0.5-5kW and 10-15kW power range. These systems will be smaller, lighter and more efficient systems that reduce the demand for fossil fuels. These efforts will transition into production of systems that integrate with the Tactical Quiet Generator (TQG), AMMPS, and future generator sets. The Battery Maintenance and Storage Shelter effort will focus on developing a modular solution to store and maintain a variety of battery form factors and chemistries. Providing an environmentally protected, deployable battery maintenance and storage shelter with the capability to maintain and condition deployable batteries will significantly decrease O&M costs to the Fleet by extending the life of fielded batteries.

The FY16 to FY17 funding decreased by \$2.989M due to the completions of Mobile Electric Hybrid Power Sources (MEHPS) testing.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Environmental Control Equipment	0.403	0.202	0.262	0.000	0.262
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Completed prototype testing and integration of Engineering Change Proposals (ECPs) for the Enhanced Environmental Control Units (E2CUs).					
FY 2016 Plans: -Initiate design of legacy Environmental Control Units to increase energy efficiency.					
FY 2017 Base Plans: -Conduct evaluation for USMC Large Field Refrigeration Units (RU) replacements.					
FY 2017 OCO Plans: N/A					
Title: Mobile Power Equip/Hybrid Generator/Next Gen Power Distribution System	3.218	2.975	1.841	0.000	1.841

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: -Continued testing of the Next Generation Power Distribution system (AMEPDIS). -Initiated integration and testing of 1KW Generator with Ground Renewable Expeditionary Energy Systems (GREENS).</p> <p>FY 2016 Plans: -Initiate testing and evaluation of commercial Micro-Grid components and commercial Floodlight Sets.</p> <p>FY 2017 Base Plans: -Initiate evaluation of Energy Storage devices for use with large generators.</p> <p>FY 2017 OCO Plans: N/A</p>	-	-	-	-	-
<p>Title: Advanced Power Sources</p> <p align="right"><i>Articles:</i></p> <p>FY 2015 Accomplishments: -Completed testing of Medium Hybrid Expeditionary Energy Systems (MHEES). -Continued test and evaluation of Mobile Electric Hybrid Power Sources (MEHPS) and developed test protocol.</p> <p>FY 2016 Plans: MOBILE ELECTRIC HYBRID POWER SOURCES (MEHPS) -Initiate Engineering, Manufacturing and Development (EMD) of the Mobile Electric Hybrid Power Sources- Award two RDT&E contracts. Each contractor to produce 6 each for a total of 12 test articles. Plan for government testing in FY17 with completion in FY18.</p> <p>FY 2017 Base Plans: MOBILE ELECTRIC HYBRID POWER SOURCES (MEHPS) -Initiate Mobile Electric Hybrid Power Sources (MEHPS) developmental testing and Battery Storage and Maintenance Shelter.</p> <p>FY 2017 OCO Plans: N/A</p>	0.939 4	5.976 12	2.987 6	0.000 -	2.987 6
Accomplishments/Planned Programs Subtotals	4.560	9.153	5.090	0.000	5.090

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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/6054: <i>Environmental Control Equipment</i>	0.989	0.000	0.018	-	0.018	1.401	4.528	3.375	3.441	Continuing	Continuing
• PMC/6366-1: <i>Mobile Power Equipment</i>	4.919	0.738	3.493	-	3.493	6.675	9.727	6.075	6.192	Continuing	Continuing
• PMC/6366-2: <i>Advanced Power Sources</i>	3.868	8.302	14.480	-	14.480	3.209	15.279	15.565	15.868	Continuing	Continuing

Remarks

D. Acquisition Strategy

Initial focus on development of more efficient 36,000 BTU/Hr and 60,000 BTU/Hr size model Environmental Control Units (ECUs), since they make up the greatest percentage of the inventory and are used extensively for shelter heating and cooling. Full and open competition. Three contractors to develop and deliver prototypes in two size models. Government testing to validate performance. Single contractor to produce both models using multi-year ID/IQ production contract. Low Rate Initial Production (LRIP), followed by LRIP testing, then Full Rate Production (FRP) to procure using PMC funds on annual Delivery Orders. ECUs are organically supported by Marines.

Initial focus on development of Hybrid Generator Systems using AMMPS generators began in FY13, and Power Distribution in FY14. For each effort, strategies are very similar: Full and open competition. Three contractors to develop and deliver prototypes in two size models. Government testing to validate performance. Single contractor to produce both models using multi-year ID/IQ production contract. LRIP, followed by LRIP testing, then Full Rate Production to procure using PMC funds on annual Delivery Orders. All equipment is organically supported by Marines. The 1kW Generator effort will be to integrate and test these generators in USMC unique applications. Generators will be procured by others on a DoD contract.

The acquisition strategy is to focus on development of the Mobile Electric Hybrid Power System (MEHPS) and Battery Maintenance and Storage Shelter. These R&D efforts will focus on achieving the Marine Corps goal of lightening the MAGTF and the individual Marine combat load through reduced battery weight and logistical fuel resupply needs. The developments will focus on making these systems smaller, lighter and more efficient. The MEHPS program will purchase 6 medium and 6 light systems from 2 vendors through competitively awarded EMD contracts. The Battery Maintenance and Storage Shelter will purchase 3 systems from 2 vendors through competitively awarded EMD contracts. Both systems will undergo rigorous electrical, environmental, safety, and performance testing to ensure the systems are robust and meet user requirements. Information learned in the EMD phase will help define the performance specification that will be used award full and open production contracts.

E. Performance Metrics

E2CU: Energy efficiency; size; weight; EPA-approved refrigerant; affordability; organically supportable.
 MOBILE POWER: Energy efficiency; size; weight; affordability; organically supportable.

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MEHPS: 20% reduction in weight, 50% increase in power capability, 20% reduction in volume.
BMASS: Energy efficiency; size; weight; ability to charge specified batteries.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
APS MHEES/MEHPS Testing	MIPR	NSWC : CARDEROCK, MD	0.000	0.772	Dec 2015	0.000		0.000		-		0.000	0.000	0.772	-
APS Battery Storage and Maint Shelter	TBD	TBD : TBD	0.000	0.000		0.000		1.371	Jun 2017	-		1.371	0.000	1.371	-
E2CU DEVELOPMENT	C/FFP	VAR : VAR	0.000	0.000		0.202	Mar 2016	0.000		-		0.000	0.000	0.202	-
APS MEHPS EMD	C/DIQ	TBD : TBD	0.000	0.000		5.976	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	VAR : VAR	11.122	0.000		0.000		0.000		-		0.000	0.000	11.122	-
Subtotal			11.122	0.772		6.178		1.371		-		1.371	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years Cumulative Funding	Various	VAR : VAR	0.059	0.000		0.000		0.000		-		0.000	0.000	0.059	-
Subtotal			0.059	0.000		0.000		0.000		-		0.000	0.000	0.059	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ECE E2CU TESTING	Various	ABERDEEN TEST CENTER : ABERDEEN, MD	0.917	0.403	Apr 2015	0.000		0.000		-		0.000	0.000	1.320	-
APS Improved Solar Panel Test Support	MIPR	NSWC : CARDEROCK, MD	0.000	0.167	Jul 2015	0.000		0.000		-		0.000	0.000	0.167	-
APS MEHPS Testing (DT)	MIPR	ABERDEEN TEST CENTER : ABERDEEN, MD	0.000	0.000		0.000		1.616	Dec 2016	-		1.616	0.000	1.616	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ECE SFRS/LFRS EVALUATION	MIPR	ABERDEEN TEST CENTER : ABERDEEN MD	0.000	0.000		0.000		0.262	Dec 2016	-		0.262	0.000	0.262	-
Prior Year Cumulative Funding	Various	Various : Various	4.542	0.000		0.000		0.000		-		0.000	0.000	4.542	-
MPE MICRO GRID TESTING	MIPR	ABERDEEN TEST CENTER : ABERDEEN MD	0.000	1.051	Jun 2015	2.003	Feb 2016	1.271	Dec 2016	-		1.271	Continuing	Continuing	Continuing
MPE FLS AND 1KW INTEGRATION TESTING	MIPR	ABERDEEN TEST CENTER : ABERDEEN MD	0.000	0.000		0.972	Apr 2016	0.000		-		0.000	0.000	0.972	-
MPE MICRO-GRID EVALUATION	MIPR	PM E2S : FT BELVOIR VA	0.000	0.600	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			5.459	2.221		2.975		3.149		-		3.149	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MPE PM support for development and test mgmt	C/FFP	MCSC : Quantico, VA	0.187	1.567	Jul 2015	0.000		0.570	Jun 2017	-		0.570	0.000	2.324	-
Subtotal			0.187	1.567		0.000		0.570		-		0.570	0.000	2.324	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	16.827	4.560	9.153	5.090	-	5.090	-	-	-

Remarks
Environmental Control Equipment, Mobile Power Equipment and Advanced Power are part of Expeditionary Energy Initiatives.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2510 / MAGTF CSSE & SE
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ADVANCED POWER SOURCES -BMASS	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
									MS B ▲	EMD ▲																		
					TECH REVIEWS																							
													DT				MS C ▲											

2017PB - 0206624M - 2510

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2510 / MAGTF CSSE & SE
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ADVANCED POWER SOURCES -RENEWABLE ENERGY- MEHPS	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
						▲ MS B																						
	TECH REVIEWS																											
						▲ EMD																						
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2510 / MAGTF CSSE & SE
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ENVIRONMENTAL CONTROL EQUIPMENT - SFRS	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
						Dev & Validation Testing				PROC DO 1		FIELDING DO 1		PROC DO 2		FIELDING DO 2		PROC DO 3		FIELDING DO 3		PROC DO 4		FIELDING DO 4				

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2510 / MAGTF CSSE & SE
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ENVIRONMENTAL CONTROL EQUIPMENT - LFRS	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021									
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q						
									Dev & Validation Testing																									
									PROD VERIFICATION TESTING ◆								PROC DO 1 ◆	FIELDING DO 1 ◆	PROC DO 2 ◆	FIELDING DO 2 ◆	PROC DO 3 ◆	FIELDING DO 3 ◆												

2017PB - 0206624M - 2510

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2510 / MAGTF CSSE & SE
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MOBILE POWER EQUIPMENT- MICRO-GRID TESTING	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
			EVALUATION ◆						PROC DO 1 ◆		FIELDING DO 1 ◆		PROC DO 2 ◆		FIELDING DO 2 ◆													

2017PB - 0206624M - 2510

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ADVANCED POWER SOURCES -BMASS				
MS B	1	2017	1	2017
CONTRACT AWARD	2	2017	2	2017
TECHNICAL REVIEWS	2	2016	2	2018
DEVELOPMENTAL TESTING (DT)	4	2017	2	2018
MS C	3	2018	3	2018
ADVANCED POWER SOURCES -RENEWABLE ENERGY- MEHPS				
MS B	2	2016	2	2016
TECHNICAL REVIEWS	2	2015	1	2018
DEVELOPMENTAL TESTING (DT)	2	2017	4	2017
MS C	3	2018	3	2018
CONTRACT AWARD	2	2016	2	2016
IOT&E	2	2020	2	2020
ENVIRONMENTAL CONTROL EQUIPMENT - SFRS				
TEST & EVALUATION	2	2016	4	2016
PROCUREMENT D.O. 1	2	2017	2	2017
FIELDING D.O.1	4	2017	4	2017
PROCUREMENT D.O. 2	2	2018	2	2018
FIELDING D.O. 2	4	2018	4	2018
PROCUREMENT D.O. 3	2	2019	2	2019
FIELDING D.O. 3	4	2019	4	2019
PROCUREMENT D.O.4	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2510 / <i>MAGTF CSSE & SE</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
FIELDING D.O. 4	4	2020	4	2020
ENVIRONMENTAL CONTROL EQUIPMENT - LFRS				
TEST & EVALUATION	2	2017	4	2017
PRODUCTION VERIFICATION TESTING	3	2017	3	2017
PROCUREMENT D.O. 1	2	2018	2	2018
FIELDING D.O. 1	4	2018	4	2018
PROCUREMENT D.O. 2	2	2019	2	2019
FIELDING D.O. 2	4	2019	4	2019
PROCUREMENT D.O. 3	2	2020	2	2020
FIELDING D.O. 3	4	2020	4	2020
MOBILE POWER EQUIPMENT- MICRO-GRID TESTING				
EVALUATION	3	2015	3	2015
PROCUREMENT D.O. 1	2	2017	2	2017
FIELDING D.O. 1	4	2017	4	2017
PROCUREMENT D.O. 2	2	2018	2	2018
FIELDING D.O. 2	4	2018	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2929 / Testing Measuring Diag Equip & SE
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2929: Testing Measuring Diag Equip & SE	8.017	0.834	0.502	0.538	-	0.538	0.574	0.614	0.627	0.640	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Marine Corps Family of Automatic Test Systems (ATS), formerly called Third Echelon Test Sets (TETS), provides automatic test program capability for use by technicians both in garrison and the forward edge of the battlefield; specifically in the areas of interactive electronic technical manuals, condition/predictive based maintenance, and embedded sensors and prognostics.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Automatic Test Systems (ATS)	0.834	0.502	0.538	0.000	0.538
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Completed advanced technology concepts for automatic test and integrate the subsystems and components into fielded automatic test solutions to support weapon systems.					
FY 2016 Plans: -Continue to develop new advanced technology concepts for automatic test and integrate the subsystems and components into fielded automatic test solutions to support weapon systems.					
FY 2017 Base Plans: -Continue to develop new advanced technology concepts for automatic test and integrate the subsystems and components into fielded automatic test solutions to support weapon systems.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.834	0.502	0.538	0.000	0.538

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/4181: Automatic Test Systems (ATS)	14.648	7.233	8.282	-	8.282	6.855	8.479	4.999	5.096	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2929 / <i>Testing Measuring Diag Equip & SE</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Automatic Test Systems (ATS) acquisition is being done through U.S. Army Armament Research, Development & Engineering Center (ARDEC), Picatinny contracts; In-house at Marine Corps Logistics Command (MCLC), Albany, GA; Naval Supply Systems Command (NAVSUP), San Diego, CA; and Commercial Technologies for Maintenance Activities (CTMA) at OSD, Washington D.C.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 2929 / Testing Measuring Diag Equip & SE
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ATS Tech Eval & HW Radio Frequency	C/FFP	ARDEC : Picatinny, NJ	0.000	0.000		0.253	Apr 2016	0.000		-		0.000	0.000	0.253	-
ATS Study & Hardware 5	C/FFP	NAVSUP : San Diego, CA	0.911	0.200	Mar 2015	0.000		0.000		-		0.000	0.000	1.111	-
ATS Tech Eval & HW Digital Test	C/FFP	ARDEC : Picatinny, NJ	0.000	0.000		0.000		0.538	Mar 2017	-		0.538	0.000	0.538	-
ATS Study & Hardware 4	C/FFP	OSD : Washington, D.C.	0.500	0.500	Sep 2015	0.000		0.000		-		0.000	0.000	1.000	-
Prior Years Cumulative Funding	Various	N/A : N/A	2.901	0.000		0.000		0.000		-		0.000	0.000	2.901	-
Subtotal			4.312	0.700		0.253		0.538		-		0.538	0.000	5.803	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support (ATS)	WR	MCLB : Albany, GA	3.705	0.134	Apr 2015	0.249	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			3.705	0.134		0.249		0.000		-		0.000	-	-	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	8.017	0.834	0.502	0.538	-	0.538	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 2929 / <i>Testing Measuring Diag Equip & SE</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2929				
Milestone B	2	2018	2	2018
Milestone C	1	2020	1	2020
Full Rate Production Decision	2	2020	2	2020
Initial Operational Capability (IOC)	4	2020	4	2020
Full Operational Capability (FOC)	3	2021	3	2021
Developmental Testing	1	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / Marine Corps Cmbt Services Supt	Project (Number/Name) 9C90 / MTRV Mod
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9C90: MTRV Mod	43.465	1.770	4.066	0.740	-	0.740	1.057	1.295	0.139	0.141	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Medium Transport Vehicle Replacement Modification program line funds numerous modifications and initiatives that are required to address operational priorities, engineering change proposals, safety concerns, support equipment inefficiencies, tool malfunctions, product quality deficiencies, and other issues that affect vehicle reliability, availability, maintainability, readiness, as well as energy efficiency. A proactive and focused approach ensures proper vehicle sustainment and life-cycle management, and it allows the program office the flexibility to develop and implement improvements as needed to respond to the evolving needs of the Marine Corps.

The decrease (\$3.326M) from FY16 to FY17 is due to previous attainment of the AAO and continued transition of the program into the sustainment phase.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	1.586	1.969	0.423	0.000	0.423
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Initiated development of a Lightweight Cab for the MTRV to reduce fuel consumption over the life of the vehicle.					
-Supported the development of various ECPs due to continual changes in the threat environment which requires on-going vehicle modifications.					
FY 2016 Plans:					
-Initiate product development in support of the Office of Naval Research (ONR) Future Naval Capability (FNC) initiative for fuel economy components on different variants of the MTRV vehicles in preparation of its transition to the program office to include the detailed design of individual components and subsystems.					
-Continue technical reviews on equipment developed.					
-Support the development of various ECPs due to continual changes in the threat environment which requires on-going vehicle modifications.					
FY 2017 Base Plans:					
-Continue detailed design and integration of fuel efficiency initiatives for the MTRV.					
-Continue development of ECPs required to respond to changes in threat environment and on-going vehicle modifications.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 9C90 / <i>MTVR Mod</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: -Resume activities in support of the MTVR vehicle such as ECPs, safety, & survivability upgrades in response to continual changes in the threat environment to protect the warfighter and vehicle from possible catastrophic events, and in order to meet the current and future operations of Expeditionary Force 21. -Initiate support of energy initiatives aligning with the Commandant of the Marine Corps (CMC) priority for reducing energy costs, logistics footprint, and an improved environment. -Continue acquisition planning and logistics analyses associated with fuel efficiency improvements to the MTVR.</p> <p>FY 2017 Base Plans: -Continue support of energy initiatives aligning with the Commandant of the Marine Corps (CMC) priority for reducing energy costs, logistics footprint, and an improved environment. -Continue activities in support of the MTVR vehicle such as ECPs, safety, & survivability upgrades in response to continual changes in the threat environment to protect the warfighter and vehicle from possible catastrophic events, and in order to meet the current and future operations.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	1.592	0.121	0.000	0.121
	-	-	-	-	-
<p>Title: Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: -Continued Modeling & Simulation testing to support the MTVR.</p> <p>FY 2016 Plans: -Initiate Test & Evaluation efforts supporting ECP/safety mods of the MTVR. Also restarts Energy Initiative Test & Evaluation efforts, which support the CMC's priority for reducing energy costs, logistics footprint, and an improved environment.</p>	0.184	0.505	0.196	0.000	0.196
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 9C90 / <i>MTVR Mod</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Conduct design verification and design qualification testing of components and subsystems that achieve fuel efficiency of improvements on the MTVR. FY 2017 Base Plans: -Continue conducting design qualification testing and field user evaluations of components and subsystems that achieve fuel efficiency improvements on the MTVR. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.770	4.066	0.740	0.000	0.740

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/5050: <i>MTVR Motor Transport Mods</i>	0.464	5.433	7.222	-	7.222	6.547	8.228	8.401	8.564	Continuing	Continuing

Remarks
MTVR portion of PMC BLI 5050 IS ASSOCIATED WITH MTVR C9C90

D. Acquisition Strategy
The strategy for the MTVR Modification initiative is to aid in the prevention of parts obsolescence, address safety concerns, and respond to emergent threats. A proactive and focused approach ensures proper vehicle sustainment and life-cycle management, and it allows the program office the flexibility to develop and implement improvements as required to respond to evolving needs.

The strategy for the MTVR Fuel Efficiency initiative will be to continue development activities once program is transitioned from the Office of Naval Research through the various Warfare Centers and perform Limited User Evaluation testing via Governmental/Commercial facilities.

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206624M / Marine Corps Cmbt Services Supt				9C90 / MTRV Mod							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Efficiency (FNC) Development	WR	NSWC : Panama City, FL	0.000	0.000		1.722	Jun 2016	0.423	Apr 2017	-		0.423	Continuing	Continuing	Continuing
ECP Development	WR	NSWC : Panama City, FL	0.000	0.000		0.247	May 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Lightweight Cab Development	C/CPFF	Gravikor : Ann Arbor, MI	0.000	1.586	Mar 2015	0.000		0.000		-		0.000	0.000	1.586	-
Prior Years Cumulative Funding	Various	Various : Various	19.798	0.000		0.000		0.000		-		0.000	0.000	19.798	-
Subtotal			19.798	1.586		1.969		0.423		-		0.423	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Initiative	WR	NSWC : Panama City, FL	0.300	0.000		0.892	Jun 2016	0.121	Sep 2017	-		0.121	Continuing	Continuing	Continuing
ECP Support	C/CPFF	Oshkosh : Oshkosh, WI	0.000	0.000		0.300	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Safety Initiatives	C/CPFF	Oshkosh : Oshkosh, WI	0.000	0.000		0.400	Apr 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	10.762	0.000		0.000		0.000		-		0.000	0.000	10.762	-
Subtotal			11.062	0.000		1.592		0.121		-		0.121	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Energy Initiative Testing	WR	Aberdeen Proving Ground : Aberdeen, MD	0.000	0.000		0.278	Jul 2016	0.196	Jun 2017	-		0.196	Continuing	Continuing	Continuing

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206624M / <i>Marine Corps Cmbt Services Supt</i>	Project (Number/Name) 9C90 / <i>MTVR Mod</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 9C90</i>				
Fuel Efficient Modifications	3	2016	4	2021
Safety Mod Development	1	2015	4	2021
ECP Development	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0206625M / <i>USMC Intelligence/Electronics Warfare Sys</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	54.722	16.178	12.671	17.171	-	17.171	19.548	24.825	20.996	21.493	Continuing	Continuing
2272: <i>Intel Command and Control (C2) Sys</i>	54.722	16.178	12.671	17.171	-	17.171	19.548	24.825	20.996	21.493	Continuing	Continuing

Note

The FY 2017 funding request was reduced by \$0.168 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

This Program Element (PE) for Intelligence Command and Control (C2) includes Military Intelligence Program (MIP) funds for Marine Corps Intelligence capabilities necessary to support the employment of reconnaissance, surveillance, and target acquisition resources and the timely planning and processing of all-source intelligence. It ensures that all-source tactical intelligence is tailored to meet specific mission requirements. The systems collect and convert raw intelligence data on the battlefield into processed information and deliver the processed products to the Intelligence Analysis Systems (IAS) for analysis and dissemination.

B. Program Change Summary (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	14.170	13.152	16.580	-	16.580
Current President's Budget	16.178	12.671	17.171	-	17.171
Total Adjustments	2.008	-0.481	0.591	-	0.591
• Congressional General Reductions	-	-0.030			
• Congressional Directed Reductions	-	-0.451			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.008	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	3.013	-	3.013
• Rate/Misc Adjustments	0.000	0.000	-2.422	-	-2.422

Change Summary Explanation

The increase of \$.591M in FY17 aligns funding profiles to the acquisition phase for the Technical Control and Analysis Center (TCAC), Tactical Signal Intelligence (SIGINT) Collection System (TSCS), Intelligence Analysis System (IAS), and Counterintelligence (CI) and Human Intelligence (HUMINT) Equipment Program (CIHEP) programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0206625M / <i>USMC Intelligence/Electronics Warfare Sys</i>	
<p>The \$4.5M increase between FY16 and FY17 provides funding for the following Major Intelligence Command and Control efforts: TSCS for increased development, testing and evaluation of advanced SIGINT technology; TCAC for the integration of next generation analysis tools and hardware components; and IAS for integration, system testing, and evaluation of Advanced Analytic technologies.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206625M / USMC Intelligence/ Electronics Warfare Sys				Project (Number/Name) 2272 / Intel Command and Control (C2) Sys			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2272: Intel Command and Control (C2) Sys	54.722	16.178	12.671	17.171	-	17.171	19.548	24.825	20.996	21.493	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Intelligence Command and Control (C2) includes Military Intelligence Program (MIP) funds for Marine Corps Intelligence capabilities necessary to support the employment of reconnaissance, surveillance, and target acquisition resources and the timely planning and processing of all-source intelligence through all phases of operation. It ensures that all-source tactical intelligence is tailored to meet specific mission requirements. The systems below collect and convert raw intelligence data on the battlefield into processed information and deliver the processed products to the Intelligence Analysis Systems (IAS) for analysis and dissemination.

PERSISTENT INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE (PISR) Ground Collection Systems: PISR is a comprehensive strategy that synchronizes organic and external ISR assets in support of MAGTF operations. This capability involves sensing the operational environment through a variety of systems, from satellites overhead to reconnaissance Marines on the ground. PISR incorporates terrestrial sensing capability from the following ground collection systems:

Communication Emitter Sensing and Attacking System (CESAS) has the mission to disrupt, degrade or deny detected adversarial communication emitters. CESAS covers the High Frequency (HF), Very High Frequency (VHF) and Ultra High Frequency (UHF) frequency ranges against enemy emitters using modern modulation schemes. CESAS allows flexible employment to conduct Electronic Attack (EA) while on the move or in a stationary position, thus optimizing the Commanders' ability to employ this asset for the greatest success of the mission.

Counterintelligence (CI) and Human Intelligence (HUMINT) Equipment Program (CIHEP) provides the MAGTF with integrated, standardized, and interoperable information (automated data processing), communication, and specialized equipment to conduct the full spectrum of tactical CI/Force Protection to include Irregular Warfare, HUMINT, and technical collection operations. CIHEP provides each CI/HUMINT Company (CIHCo) with a suite of equipment comprised of commercial-off-the-shelf, government-off-the-shelf, and non-developmental items (COTS/GOTS/NDI). It integrates audio, video, imagery, communications, technical surveillance and computer equipment into lightweight, modular, scalable, deployable packages. CIHEP enhances the capability to collect, receive, process, and disseminate CI/HUMINT information from overt, sensitive, technical, tactical, and Force Protection, in the service, joint, and combined forces area of operations. Increase of \$0.192M from FY16 to FY17 provides engineering, integration and technical support for sensor software consolidation.

MAGTF Secondary Imagery Dissemination System (MSIDS) Family of Systems (FoS) provides organic tactical digital imagery collection, transmission and receiving capability to the MAGTF Commander. MSIDS is comprised of components necessary to enable Marines to capture, manipulate, annotate, transmit and receive images in Near Real Time (NRT), internally with subordinate commands that are widely separated throughout the areas of operation and externally with higher and adjacent commands. MSIDS capability resides with the MAGTF G/S-2 sections and Ground Reconnaissance Battalions, Light Armored Reconnaissance Battalions, Infantry Battalion Scout Sniper Platoons and Marine Corps Forces Special Operations Command. The MSIDS FoS extends the digital imaging capability to all echelons within the Marine Expeditionary Force (MEF), down to and including battalions and squadrons. Captured images are capable of being forwarded throughout the

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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<p>MAGTF through the use of Base Station Workstation/Communication Interface (BW/CI), Out Station Workstation/Communication Interface (OW/CI) or existing C4ISR architecture. Images can also be transmitted to the Tactical Exploitation Group (TEG) for more detailed processing and analysis. The Video Exploitation Workstation (VEW) is used to import, manipulate, annotate still and video imager, create intelligence products, lift still frames from video, view multi-format TV signals and provide a field briefing capability.</p> <p>Tactical Remote Sensor Systems (TRSS) provides all weather direction, location determination, targeting, and tactical indications and warning of enemy activity in the Marine Air-Ground Task Force (MAGTF) Commander's Area of Interest. TRSS is an equipment suite consisting of three primary sub-systems: Unattended Ground Sensors (UGS); Relay Systems; and monitoring systems. The sensor systems include seismic/acoustic sensors, electro-magnetic sensors, and infrared (passive) sensors. The relay systems include SATCOM retransmission systems. The monitoring system includes the Sensor Monitoring imaging sensors group and Hand-Held Monitors (HHM). The composition of the three sub-systems are comprised of several individual components. Upgrading individual components will occur on an as needed basis. TRSS 6.0 development improves the TRSS sensor management software in order to integrate TRSS sensor systems with theater-provided-equipment sensor systems and improve system interoperability.</p> <p>Tactical Signal Intelligence (SIGINT) Collection System (TSCS): TSCS incorporates Team Portable Collection System (TPCS) and Radio Reconnaissance Equipment Program (RREP) into a single effort beginning in FY14. It provides modular, lightweight and team/man transportable/portable systems and components which provide signal intercept, collection, Direction-Finding (DF), reporting and collection management capability to MAGTF Commander. It provides the MAGTF Commander with a modular and scalable carry on/carry off suite of equipment which exploits information from more technically advanced target sets. TSCS uses rapid technology insertion processes and procedures to incorporate advanced SIGINT technology to allow the MAGTF Commander to maintain technological superiority. The increase of \$1.419M from FY16 to FY17 reflects increased development, testing, and evaluation of advanced SIGINT technology.</p> <p>PROCESSING, EXPLOITATION, ANALYSIS AND PRODUCTION: Processing, exploitation, analysis and production actions of the Intelligence process enables us to understand the all-source information/data revealed by PISR. The Distributed Common Ground System - Marine Corps (DCGS-MC) Enterprise (BLI 4767) will serve as the Marine Corps ISR Enterprise (MCISRE) backbone, migrating select capabilities into a single, integrated, net-centric baseline via clearly defined capability drops.</p> <p>Intelligence Analysis System, Family of Systems (IAS FoS) provides timely planning and all source fusion, analysis, and dissemination of intelligence across the Intelligence Community of the Marine Air-Ground Task Force (MAGTF). IAS FoS is a scalable system that supports all missions, and provides a tactical intelligence capability tailored to meet specific mission requirements. Advanced analytics provides improved linking of structured and unstructured data sources, data and information discovery, and improved interoperability of data and exchange amongst the existing toolset applications. Funding allows the IAS FoS to stay up-to-date with current technology (COTS/GOTS) that allows an increase in response time of intelligence analysis process, better quality intelligence products, and timely dissemination for units in all deployed environments. \$1.879M increase from FY16 to FY17 supports integration, system testing, and evaluation of Advanced Analytic technologies into the IAS FoS.</p> <p>Technical Control Analysis Center (TCAC), consisting of the AN/UYQ-83 TCAC Remote Analysis Workstation (RAWS), AN/MYQ-9 TCAC Transportable Workstation, and Cross Domain Solution (CDS) , is the focal point of Radio Battalions (RADBN), Marine Corps Forces Special Operations Command (MARFORSOC), and Fixed Wing Marine Electronic Attack Squadron (VMAQ) Signals Intelligence (SIGINT) operations. TCAC automatically collects, stores, retrieves and plays back digital audio</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / <i>USMC Intelligence/ Electronics Warfare Sys</i>	Project (Number/Name) 2272 / <i>Intel Command and Control (C2) Sys</i>
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signals; fuses and analyzes SIGINT data from tactical, theater and national collectors and databases for dissemination to tactical commanders. TCAC provides SIGINT analysis applications to deployable Marine Air-Ground Task Force (MAGTF) units capable of directing and managing the technical and operational functions of other RADBN SIGINT/Electronic Warfare (EW) assets. TCAC provides termination of national, theater and tactical data networks for data exchange with the tactical SIGINT/ EW assets, the Intelligence Analysis System (IAS), national databases, and provides USMC tactical SIGINT collection and analytical data into the Real-Time Regional Gateway (RTRG) and Distributed Common Ground System - Marine Corps (DCGS-MC). Increase of \$1.405M from FY16 to FY17 will support integration of next generation of TCAC analysis tools and hardware components such as the TWS into the TCAC FoS.

INTELLIGENCE DISSEMINATION AND UTILIZATION (IDU): The IDU capability set performs the dissemination and integration functions of the Intelligence process. Dissemination connects the Intelligence product to the Commander who "operationalizes" these products through informed decisions.

Intelligence Broadcast Receiver (IBR) family conforms to the DoD Integrated Broadcast Service (IBS) objectives of interoperability and commonality across the Services to receive and process near real-time intelligence data. The Universal Serial Bus (USB) Embedded National Tactical Receiver (ENTR) system, the newest component of the IBR family, is an integral portion of 7 Programs of Record, providing a significant reduction in size and weight. The USB ENTR provides access to IBS data via Ultra High Frequency (UHF) Satellite Communications (SATCOM) broadcast channels delivering near real-time intelligence information within Combatant Commanders theater of operation allowing intelligence analysis to respond to accelerated operations cycles.

Intelligence Equipment Readiness (IER) supports rapid prototyping and integration of emerging technologies involving national systems data. IER provides a responsive capability to alleviate Marine Corps intelligence systems shortfalls created by rapidly evolving technology, missions and threats. The program provides for rapid technology insertion, training and logistics, and the time sensitive intelligence infrastructure requirements of Marine Corps Operating Forces and the theater and service intelligence organizations supporting those forces. IER addresses requirements that span the entire Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise (MCISR-E).

Sensitive Compartmented Information Communications (SCI COMMS) - is a Super-High Frequency (SHF) multi-band satellite communications terminal, available in a transit case configuration that provides dedicated tactical communications capability at the Top Secret/Sensitive Compartmented Information (TS/SCI) and Secret Collateral levels to USMC intelligence units. TROJAN SPIRIT terminals provide connectivity into Joint Worldwide Intelligence Communications System (JWICS), National Security Agency Network (NSANET) and Secret Internet Protocol Router Network (SIPRNET) via the TROJAN Network Control Center. Funding supports research, development and testing of incremental product improvements, product interoperability and accreditation for Top Secret/Sensitive Compartmented Information (TS/SCI) connectivity.

Tactical Exploitation of National Capabilities (TENCAP) exploits current national reconnaissance systems and programs by examining both technical and operational capabilities, implementing training, and sponsoring concept demonstrations to directly support Marine Corps operating forces. The goal is to pursue technologies which exploit data from national systems to enhance intelligence support to the Marine Air-Ground Task Force (MAGTF) and/or the supported Joint Task Force commander.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: *Communication Emitter Sensing and Attacking System (CESAS): Product Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Completed development of CESAS II.</p> <p>FY 2016 Plans: - Initiate development of required modifications for CESAS II</p> <p>FY 2017 Base Plans: - Initiate integration development and CESAS II Engineering Change Proposals</p> <p>FY 2017 OCO Plans: N/A</p>	0.987	0.475	0.457	0.000	0.457
	-	-	-	-	-
<p>Title: *Communication Emitter Sensing and Attacking System (CESAS): Test and Evaluation</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Completed CESAS II developmental test and evaluation.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.051	0.000	0.000	0.000	0.000
	-	-	-	-	-
<p>Title: *Communication Emitter Sensing and Attacking System (CESAS): Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Continued to provide program support for CESAS II.</p> <p>FY 2016 Plans: - Continue to provide program support for required modifications to CESAS II.</p> <p>FY 2017 Base Plans:</p>	0.024	0.025	0.044	0.000	0.044
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue to provide program support for required modifications to CESAS II. FY 2017 OCO Plans: N/A					
Title: *Counterintel and Human Intel Equip (CIHEP): Support - Engineering and Technical Articles:	0.000	0.500	0.692	0.000	0.692
FY 2015 Accomplishments: N/A FY 2016 Plans: - Initiates and provides interoperability between refreshed CIHEP Family of Systems components. - Provides engineering, integration and technical support required for CIHEP hardware and software refresh. FY 2017 Base Plans: - Provide interoperability between CIHEP Family of Systems components and other Intelligence systems in compatible technology baseline to reduce future costs. - Provide engineering, integration and technical support required for planned CIHEP and TRSS sensor software consolidation. FY 2017 OCO Plans: N/A	-	-	-	-	-
Title: *Intelligence Analysis System (IAS): Product Development Articles:	0.000	1.783	3.230	0.000	3.230
FY 2015 Accomplishments: N/A FY 2016 Plans: - Initiate integration, system testing, and evaluation of advanced analytic technologies into the Intelligence Analysis System (IAS) Family of Systems (FoS). - Initiate market research, evaluation and development of advanced analytics for transition into the IAS FoS. FY 2017 Base Plans: - Continue integration, system testing, and evaluation of advanced analytic technologies into the Intelligence Analysis System (IAS) Family of Systems (FoS).	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Initiate integration, system testing, and evaluation of Windows 10 Operating System, software enhancements and new Intelligence Workstation hardware into the IAS FoS. FY 2017 OCO Plans: N/A					
Title: *Intelligence Analysis System (IAS): Support Articles:	1.178 -	0.551 -	0.983 -	0.000 -	0.983 -
FY 2015 Accomplishments: - Continued program management support for integration of advanced analytics tools into the IAS FoS software baseline. FY 2016 Plans: - Continue program management support for integration of advanced analytics tools into the IAS FoS software baseline. FY 2017 Base Plans: - Continue program management support for integration of advanced analytic tools into the IAS FoS software baseline. - Initiate program management support for integration and testing of Windows 10 Operating System, software enhancements and new Intelligence Workstation hardware into the IAS FoS. FY 2017 OCO Plans: N/A					
Title: *Intelligence Broadcast Receiver (IBR): Support - Engineering and Technical Articles:	0.095 -	0.100 -	0.111 -	0.000 -	0.111 -
FY 2015 Accomplishments: - Continued the interoperability software certification for Tactical Receive Segment (TRS). FY 2016 Plans: - Continues required recurring interoperability software certification for Tactical Receive Segment (TRS). FY 2017 Base Plans: - Will continue required recurring interoperability software certification for Tactical Receive Segment (TRS). FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: *SCI COMMS: Support - Engineering and Technical Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Initiated engineering analysis and technical evaluation to identify and provide recommendations for resolution of critical technical, test and evaluation, and technology issues.</p> <p>FY 2016 Plans: - Initiate and support Government Acceptance Testing (GAT). Support Engineering Change Proposals (ECP) for the network refresh. ECPs are scheduled for SCIK in 4QFY16 in order to prepare for end of sale/life of Pacstar network equipment.</p> <p>FY 2017 Base Plans: - Continue development of Engineering Change Proposals for network refresh.</p> <p>FY 2017 OCO Plans: N/A</p>	0.636	0.199	0.198	0.000	0.198
	-	-	-	-	-
<p>Title: *Tactical Exploitation of National Capabilities (TENCAP): Product Development & Technical Assessments</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: - Evaluated the applicability of national intelligence data systems to the operating forces to include the transition and evaluation of NRO funded projects such as Tactical All-Weather Coalition Sharing and Releasability Tool, Specific Emitter Identification over Integrated Broadcast System (IBS), and Tactical National Targeting-Confirmed Coordinates. - Executed a Cooperative Research and Development Agreement (CRADA) with Environmental Sciences Research Incorporated (ESRI) and began coordination of additional CRADAs to evaluate technologies to host and disseminate TENCAP data. - Performed advanced technology evaluations during TALON REACH and Trident Spectre 15 exercises. - Continued Rapid Reliable Targeting (RRT) integration into Puma UAS. RRT provides cueing from SIGINT to Full Motion Video (FMV) for precision geo-registration.</p>	5.620	4.520	4.115	0.000	4.115
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Continued to support the congressionally mandated TENCAP office and all associated ongoing activities, to include the interactions with national agencies, the intelligence community, research laboratories, private industry, and academia.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continue to conduct research and development, advanced technology demonstrations, and integration of emerging technologies into the Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise (MCISRE). - Continue to support the congressionally mandated TENCAP office and all associated ongoing activities, to include the coordination with national agencies, the intelligence community, research laboratories, private industry, and academia, for exploration of collaborative Science and Technology (S&T)/R&D efforts to bring evolutionary intelligence capabilities to the operating forces. - Continue to provide technical assessments and field utility evaluations for the integration of current and emerging intelligence capabilities into the tactical decision making process. - Continue to support operational planning and enhance operating force capabilities through the identification and development of advanced technologies for the MCISRE architecture. - Continue training and education efforts by providing the operating forces with supported simulation, visualization, and improved mission planning capabilities. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue to conduct research and development, advanced technology demonstrations, and integration of emerging technologies into the Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise (MCISRE). - Continue to support the Congressionally mandated TENCAP office and all associated ongoing activities, to include the coordination with national agencies, the intelligence community, research laboratories, private industry, and academia, for exploration of collaborative Science and Technology (S&T)/R&D efforts to bring evolutionary intelligence capabilities to the operating forces. - Continue to provide technical assessments and field utility evaluations for the integration of current and emerging intelligence capabilities into the tactical decision making process. - Continue to support operational planning and enhance operating force capabilities through the identification and development of advanced technologies for the MCISRE architecture. 					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue training and education efforts by providing the operating forces with supported simulation, visualization, and improved mission planning capabilities. FY 2017 OCO Plans: N/A					
Title: *Tactical Remote Sensor System (TRSS): Support - Engineering and Technical Articles:	0.095 -	0.100 -	0.099 -	0.000 -	0.099 -
FY 2015 Accomplishments: - Continued the engineering and technical management support required for developing critical upgrades to TRSS systems. FY 2016 Plans: - Continues to provide engineering and technical management support required for developing critical upgrades to TRSS systems. FY 2017 Base Plans: - Continue engineering and technical management support required for developing critical upgrades to TRSS systems. - Provide engineering, integration and technical support required for planned TRSS and CIHEP sensor software consolidation. FY 2017 OCO Plans: N/A					
Title: *Tactical Signal Intelligence (SIGINT) Collection System (TSCS): Product Development Articles:	1.761 -	0.273 -	0.709 -	0.000 -	0.709 -
FY 2015 Accomplishments: - Continued development of TPCS and RREP technology refresh and technology insertions to support additional signals of interest. FY 2016 Plans: - Continue development for ongoing TPCS and RREP technology refresh and technology insertions as well as potential engineering changes. FY 2017 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue development for ongoing TPCS and RREP technology refresh and technology insertions as well as potential engineering changes. - Initiate development and integration of Digital Network Intelligence (DNI)/ Dual Receiver Replacement (DRR) software to include Legacy Signals of Interest (SOI). FY 2017 OCO Plans: N/A					
Title: *Tactical Signal Intelligence (SIGINT) Collection System (TSCS): Test and Evaluation Articles:	0.000 -	0.546 -	1.418 -	0.000 -	1.418 -
FY 2015 Accomplishments: N/A FY 2016 Plans: - Continue test and evaluation efforts for ongoing TPCS and RREP technology refresh and technology insertions as well as potential engineering changes. FY 2017 Base Plans: - Continue test and evaluation efforts for ongoing TPCS and RREP technology refresh and technology insertions as well as potential engineering changes. - Initiate test and evaluation of the DNI/DRR and legacy SOI. FY 2017 OCO Plans: N/A					
Title: *Tactical Signal Intelligence (SIGINT) Collection System (TSCS): Support Articles:	0.461 -	0.091 -	0.202 -	0.000 -	0.202 -
FY 2015 Accomplishments: - Continued to provide program support and management for TPCS and RREP technology refresh and technology insertions to support additional signals of interest. FY 2016 Plans: - Continue to provide program support and management for ongoing TPCS and RREP technology refresh and technology insertions as well as potential engineering changes. FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Provide program support and management for ongoing developmental testing, engineering drawings, environmental testing for server sleeves. FY 2017 OCO Plans: N/A					
Title: *Technical Control and Analysis Center (TCAC): Product Development Articles:	2.688 -	1.848 -	3.465 -	0.000 -	3.465 -
FY 2015 Accomplishments: - Initiated integration of TCAC Cyber Analysis tools and Cross Domain Solution into the TCAC Family of Systems (FoS). FY 2016 Plans: - Continue integration, testing, and selection of next generation TCAC analysis tools and hardware components such as the Remote Analysis Work Station (RAWS) and Cross Domain Solution (CDS) into the TCAC FoS. FY 2017 Base Plans: - Continue integration and testing of next generation TCAC analysis tools and hardware components such as the Transportable Workstation (TWS), JICD 4.2 net centric analytic capability, and peripheral refresh assessment into the TCAC FoS. FY 2017 OCO Plans: N/A					
Title: *Technical Control and Analysis Center (TCAC): Support Articles:	2.582 -	1.660 -	1.448 -	0.000 -	1.448 -
FY 2015 Accomplishments: - Continued technical support for the Integration of Cyber Analysis Tools into the TCAC FoS. FY 2016 Plans: - Continue technical support for integration of next generation TCAC analysis tools and hardware components such as the RAWS and CDS into the TCAC FoS FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue technical support for integration of next generation TCAC analysis tools and hardware components such as the TWS into the TCAC FoS.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	16.178	12.671	17.171	0.000	17.171

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/474703: TCAC	11.853	10.999	4.874	-	4.874	1.813	10.778	6.457	6.681	Continuing	Continuing
• PMC/474761: IAS	7.622	5.603	22.326	-	22.326	10.516	12.576	10.787	10.981	Continuing	Continuing
• PMC/700000: IAS SPARES	0.101	0.101	0.154	-	0.154	0.157	0.159	0.163	0.166	Continuing	Continuing
• PMC/700004: SCI COMMS SPARES	0.693	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.793
• PMC/474709: CIHEP	5.582	3.931	4.491	2.131	6.622	3.842	1.020	1.040	1.059	Continuing	Continuing
• PMC/474702: TSCS	3.785	1.462	8.484	5.000	13.484	9.437	12.522	6.280	6.685	Continuing	Continuing
• PMC/474701: CESAS	3.613	0.701	5.189	-	5.189	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/474700: SCI COMMS	2.230	1.355	5.136	2.000	7.136	3.186	3.206	1.891	0.246	Continuing	Continuing
• PMC/700003: TRSS SPARES	0.144	0.100	0.063	-	0.063	0.099	0.165	0.101	0.101	Continuing	Continuing
• PMC/700005: MSIDS SPARES	0.056	0.100	0.100	-	0.100	0.100	0.100	0.102	0.104	Continuing	Continuing
• PMC/474752: IBR	0.100	0.053	1.420	-	1.420	0.729	0.736	0.737	0.740	Continuing	Continuing
• PMC/474713: TRSS	1.000	0.000	0.036	1.500	1.536	0.000	0.034	0.000	0.000	Continuing	Continuing
• PMC/474719: MSIDS	0.000	0.000	0.000	1.500	1.500	0.000	0.000	0.000	0.000	0.000	1.500

Remarks
MSIDS program is in sustainment and has neither RDT&E nor baseline PMC funding in the FYDP; other funding is Spares and PMC OCO.

D. Acquisition Strategy

(U) SCI COMMS: Transitions the USMC TROJAN SPIRIT systems to the High Bandwidth Special Intelligence Palletized Terminal (HBSI-PT). The palletized system enables global access to tactical, theater, and national intelligence data stores facilitating functions, which include tasking, reporting, and dissemination by elements ranging from Ground Combat Elements to a Marine Expeditionary Force Command Element.

(U) TCAC: The acquisition of components for the TCAC will maximize the use of existing equipment, NDI/COTS/GFE equipment/software.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / USMC Intelligence/ Electronics Warfare Sys	Project (Number/Name) 2272 / Intel Command and Control (C2) Sys

(U) TRSS: TRSS makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

(U) MSIDS: MSIDS makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

(U) IER: IER makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

(U) IAS: IAS makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

(U) CIHEP: CIHEP makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

(U) IBR: IBR software upgrades are developed at Naval laboratories and integrated into the system.

(U) TENCAP: All work will be led in-house and necessary contractor support will be acquired using existing contracts. Research, test and integrate new technology and conduct advanced technology demonstrations to identify the most appropriate programs which are mature for integration of emerging technologies into the Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise (MCISR-E).

(U) CESAS: CESAS II production will consist of COTS and NDI integration into an existing GOTS architecture. Production efforts will be conducted at Naval laboratories.

(U) TSCS: TSCS makes maximum use of COTS, GOTS and NDI with Firm Fixed Price Production.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / USMC Intelligence/ Electronics Warfare Sys	Project (Number/Name) 2272 / Intel Command and Control (C2) Sys
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cummulative Funding	Various	Various : Various	27.184	0.000		0.000		0.000		-		0.000	0.000	27.184	-
CESAS	WR	SPAWAR : CHARLESTON, SC	1.513	0.787	Nov 2014	0.475	Dec 2015	0.457	Dec 2016	-		0.457	0.000	3.232	-
CESAS	C/FFP	SPAWAR8 : CHARLESTON, SC	2.242	0.200	Feb 2015	0.000		0.000		-		0.000	0.000	2.442	-
IAS	WR	SPAWAR : CHARLESTON, SC	0.000	0.000		1.783	Oct 2015	3.230	Jan 2017	-		3.230	0.000	5.013	-
TENCAP	C/CPFF	DTIC-1 : FT. BELVOIR	2.697	5.012	Nov 2014	3.132	Nov 2015	0.000		-		0.000	0.000	10.841	-
TENCAP	WR	SPAWAR : CHARLESTON, SC	0.605	0.505	Nov 2014	0.672	Jan 2016	0.505	Jan 2017	-		0.505	Continuing	Continuing	Continuing
TENCAP	FFRDC	MITRE : STAFFORD, VA	0.200	0.103	Apr 2015	0.000		0.000		-		0.000	0.000	0.303	-
TENCAP	C/CPFF	DTIC-2 : FT. BELVOIR	0.000	0.000		0.716	Jul 2016	3.610	Oct 2016	-		3.610	0.000	4.326	-
TSCS	WR	SPAWAR : CHARLESTON, SC	1.593	1.761	Jan 2015	0.273	Dec 2015	0.709	Dec 2016	-		0.709	Continuing	Continuing	Continuing
TCAC	C/CPFF	SPAWAR2 : Charleston, SC	0.000	1.344	Jan 2015	0.813	Jan 2016	1.815	Jan 2017	-		1.815	0.000	3.972	-
TCAC	WR	SPAWAR8 : San Diego, CA	5.916	1.344	Dec 2014	1.035	Oct 2015	1.650	Oct 2016	-		1.650	Continuing	Continuing	Continuing
Subtotal			41.950	11.056		8.899		11.976		-		11.976	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SCI COMMS	C/FFP	CECOM : APG, MD	0.000	0.078	Sep 2015	0.000		0.000		-		0.000	0.000	0.078	-
SCI COMMS	WR	SPAWAR-1 : Charleston, SC	0.150	0.439	Apr 2015	0.000		0.000		-		0.000	0.000	0.589	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / USMC Intelligence/ Electronics Warfare Sys	Project (Number/Name) 2272 / Intel Command and Control (C2) Sys
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SCI COMMS	WR	SPAWAR-2 : Charleston, SC	0.000	0.059	Nov 2015	0.199	Feb 2016	0.198	Nov 2016	-		0.198	0.000	0.456	-
SCI COMMS - IA Spt	C/FFP	NSWC : Dahlgren, MD	0.000	0.060	Nov 2015	0.000		0.000		-		0.000	0.000	0.060	-
TRSS	WR	SPAWAR-A2 : CHARLESTON SC	0.000	0.095	Nov 2014	0.100	Nov 2015	0.099	Dec 2016	-		0.099	Continuing	Continuing	Continuing
TSCS	C/FFP	SPAWAR88 : CHARLESTON, SC	0.000	0.187	Jul 2015	0.000		0.000		-		0.000	0.000	0.187	-
TSCS	C/FFP	MCSC7 : QUANTICO, VA	0.577	0.125	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TSCS	WR	SPAWAR11 : CHARLESTON, SC	0.000	0.000		0.081	Dec 2015	0.172	Dec 2016	-		0.172	0.000	0.253	-
TSCS	Various	MCSC : QUANTICO, VA	0.070	0.031	Sep 2015	0.010	Sep 2016	0.030	Sep 2017	-		0.030	Continuing	Continuing	Continuing
TSCS	MIPR	DTIC : FT Belvoir, VA	0.000	0.118	Apr 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
TCAC	MIPR	DTIC : FT Belvoir, VA	0.611	0.000		0.900	Apr 2016	0.000		-		0.000	0.000	1.511	-
TCAC	WR	SPAWAR-P : San Diego, CA	2.281	1.287	Jan 2015	0.358	Oct 2015	0.664	Oct 2016	-		0.664	Continuing	Continuing	Continuing
TCAC	C/FFP	SPAWAR : CHARLESTON, SC	0.382	0.440	Jan 2015	0.137	Dec 2015	0.341	Dec 2016	-		0.341	Continuing	Continuing	Continuing
TCAC	WR	SPAWAR-A : CHARLESTON, SC	0.000	0.855	Dec 2014	0.265	Oct 2015	0.443	Oct 2016	-		0.443	Continuing	Continuing	Continuing
IAS	C/FFP	DTIC : CHARLESTON, SC	0.000	1.178	Jan 2015	0.551	Oct 2015	0.983	Oct 2016	-		0.983	0.000	2.712	-
CESAS	Various	MCSC9 : QUANTICO, VA	0.000	0.024	Sep 2015	0.025	Sep 2016	0.044	Sep 2017	-		0.044	Continuing	Continuing	Continuing
IBR	Various	VARIOUS : VARIOUS	0.000	0.000		0.100	Feb 2016	0.111	Dec 2016	-		0.111	Continuing	Continuing	Continuing
IBR	WR	NSWC5 : CRANE, IN	0.000	0.095	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0206625M / USMC Intelligence/ Electronics Warfare Sys				2272 / Intel Command and Control (C2) Sys							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CIHEP	WR	SPAWAR-A : Charleston, SC	0.000	0.000		0.500	Nov 2015	0.692	Dec 2016	-		0.692	1.200	2.392	-
Subtotal			4.071	5.071		3.226		3.777		-		3.777	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	6.959	0.000		0.000		0.000		-		0.000	0.000	6.959	-
CESAS	WR	SPAWAR : CHARLESTON, SC	1.023	0.051	Nov 2014	0.000		0.000		-		0.000	0.000	1.074	-
TSCS	WR	SPAWAR : CHARLESTON, SC	0.719	0.000		0.546	Dec 2015	1.418	Dec 2016	-		1.418	Continuing	Continuing	Continuing
Subtotal			8.701	0.051		0.546		1.418		-		1.418	-	-	-
Project Cost Totals			54.722	16.178		12.671		17.171		-		17.171	-	-	-
Remarks															

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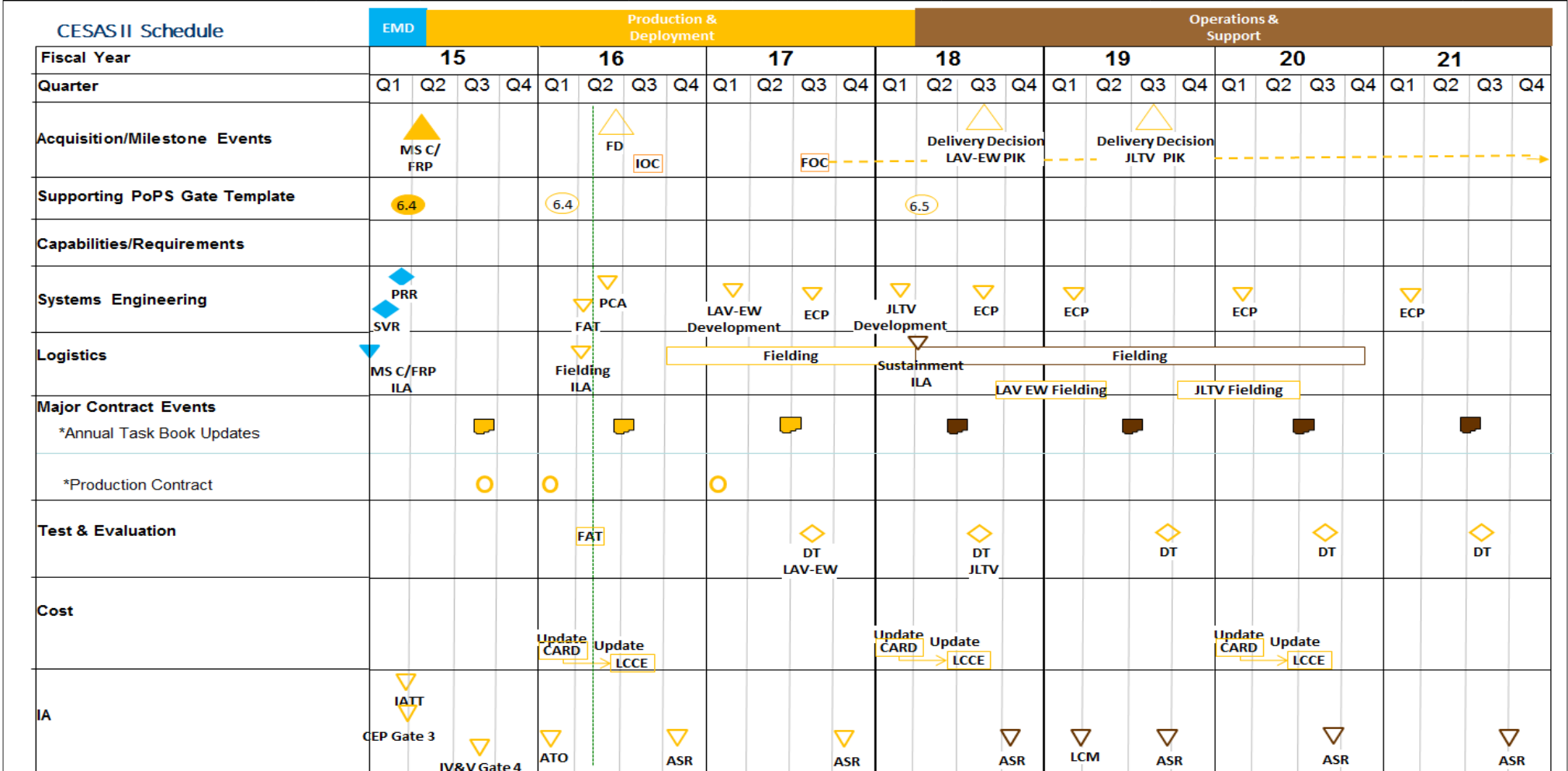
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys



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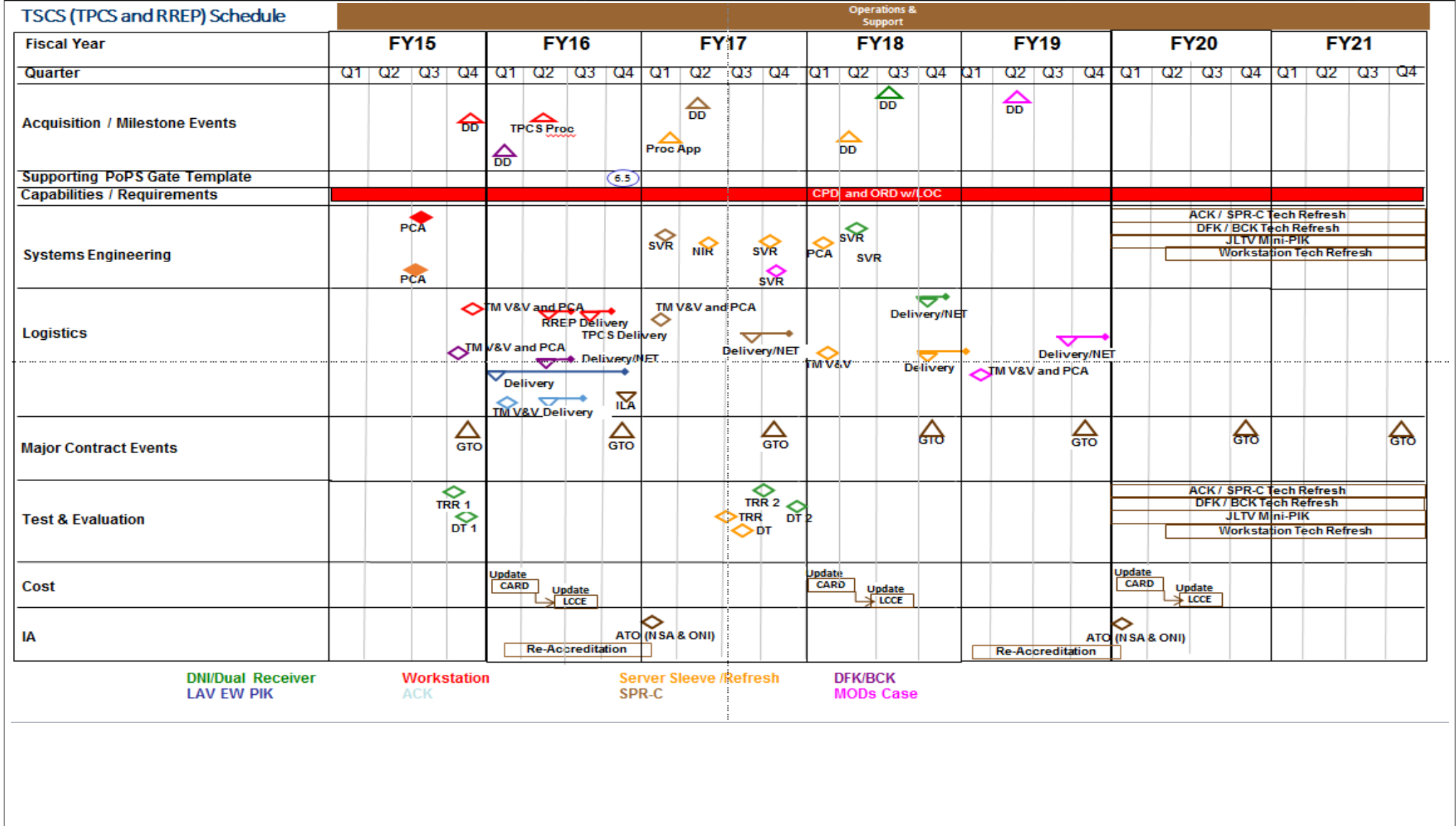
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys



DNI/Dual Receiver
LAV EW PIK

Workstation
ACK

Server Sleeve Refresh
SPR-C

DFK/BCK
MODs Case

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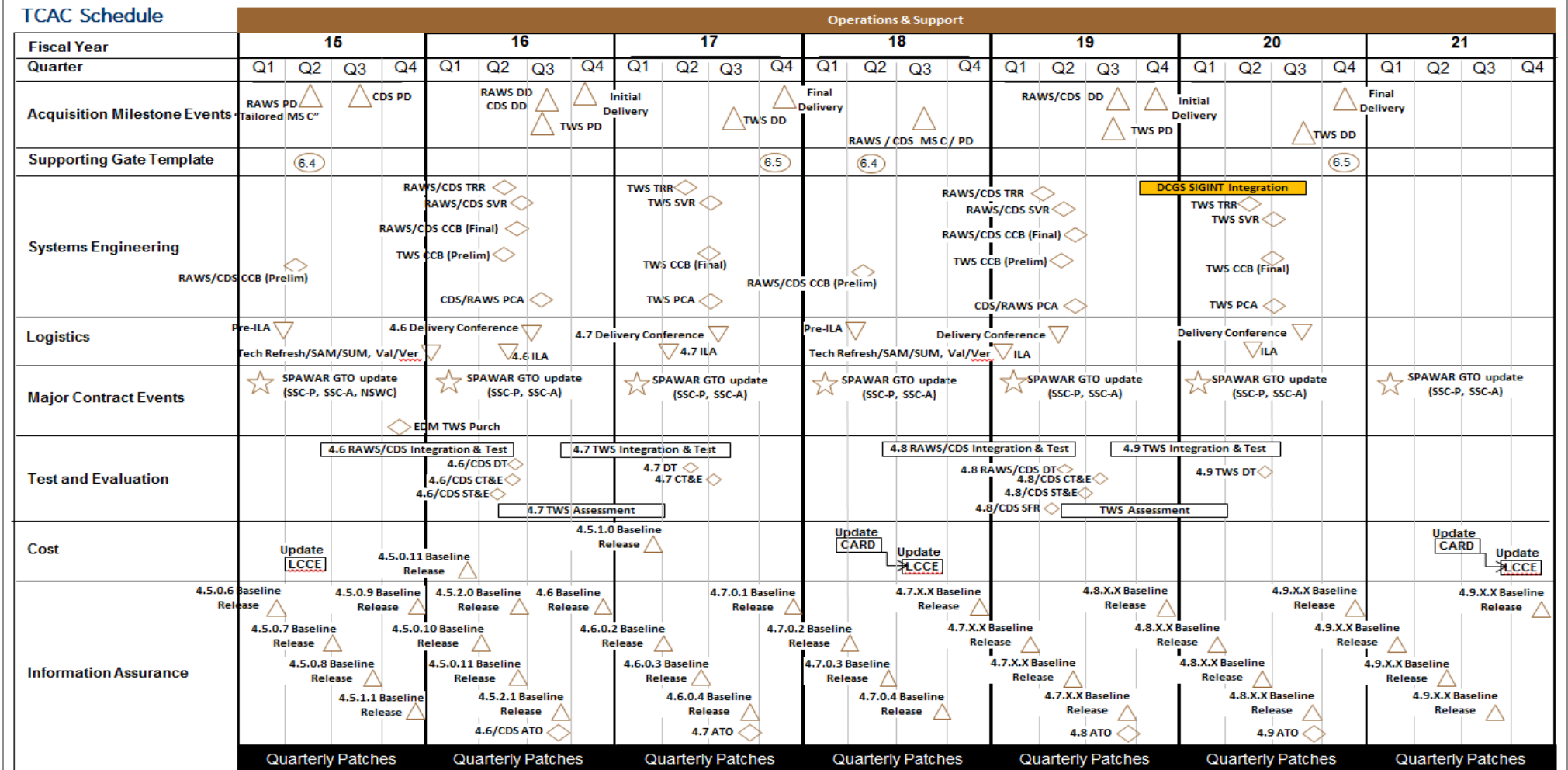
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

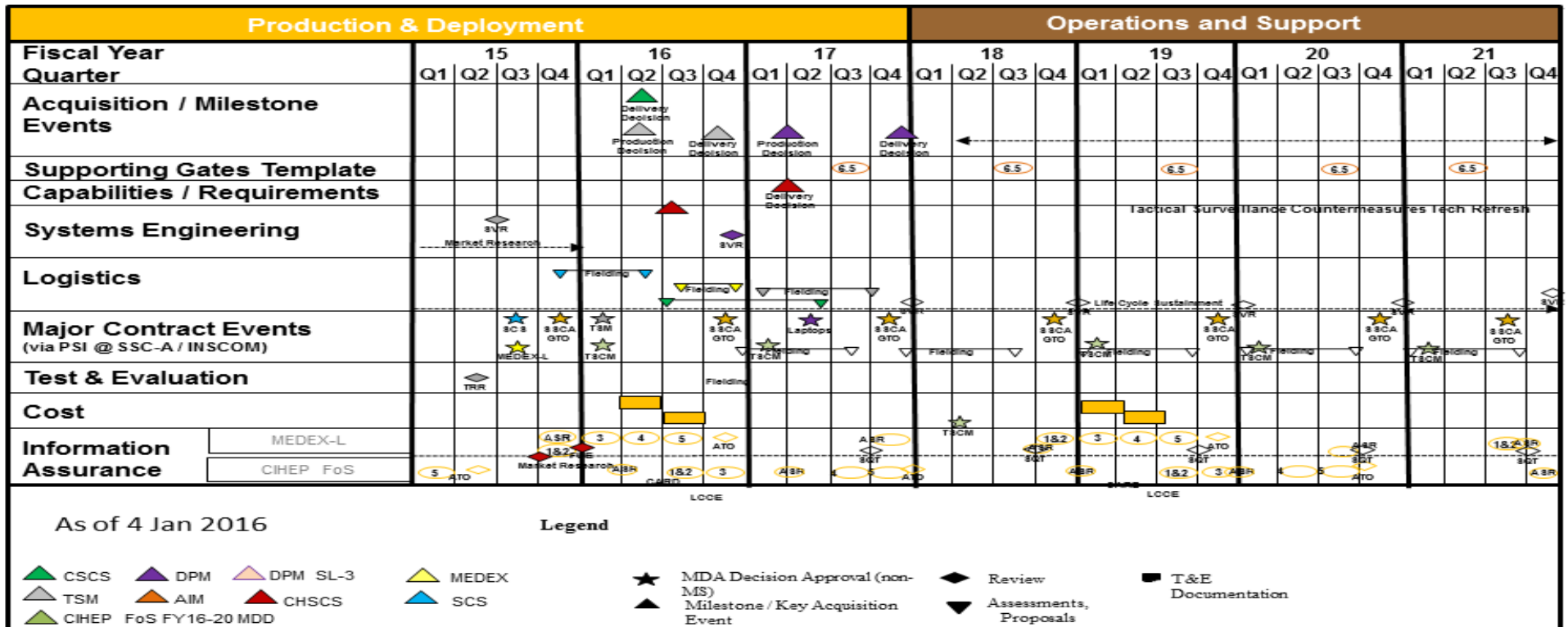
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys

CIHEP Program Schedule



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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys

TRSS SYSTEM of SYSTEMS

As of 10 Aug 2015

Operations & Support

Fiscal Year	FY15				FY16				FY17				FY18				FY19				FY20				FY21			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Acquisition /Milestone Events	FOC	MAGID-II FRP Decision	MAGID-II MDD		PIR (Surveys)	MAGID-II Delivery Decision		PIR Report	ADUGS MDD (Transition from RIF)				SDR-II MDD															
Supporting PoFS Gate					IOC	FOC			1				1															
Capabilities/Requirements									ORD Update (ADUGS)																			
Systems Engineering				SMG PCA	SMG-L PCA	SoS Spares PCA			ADUGS SVR	SDR-II SRR/SFR			SDR-II CDR															
Logistics		Sustainment ILA			MAGID-II Delivery			ADUGS ILA					SDR-II SVR		Sustainment ILA													
Major Contract Events		MAGID-II Contract Award				Follow-On Sustainment Contract Award		Laptop Refresh					SDR-II Development															
Test & Evaluation					MAGID-II Production			ADUGS TRR	ADUGS SVT				SDR-II TRR		SDR-II SVT													
Cost								LOCE Update							LOCE Update												LOCE Update	
Information Assurance		TSR: Gate 3	TSR: Gate 1-2			TSR: Gate 4	TSR: Gate 5																					
					TRSS: Gate 1-2	TRSS: Gate 3	TRSS: Gate 4	TRSS: Gate 5							SoS Reaccreditation, and Accreditation Sustainment													

- Legend**
- ★ MDA Decision Approval (non-MS)
 - ◆ Review
 - Documentation
 - ▲ Milestone / Key Acquisition Event
 - ▼ Assessments, Proposals
 - ▲ System of Systems (SoS)
 - ▲ Air Delivered Unattended Ground Sensor (ADUGS)
 - ▲ Tactical Remote Sensor Systems (TRSS) 6.0
 - ▲ Signature Data Recorder, Version-II (SDR-II)
 - ▲ Magnetic Intrusion Detector, Version-II (MAGID-II)

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

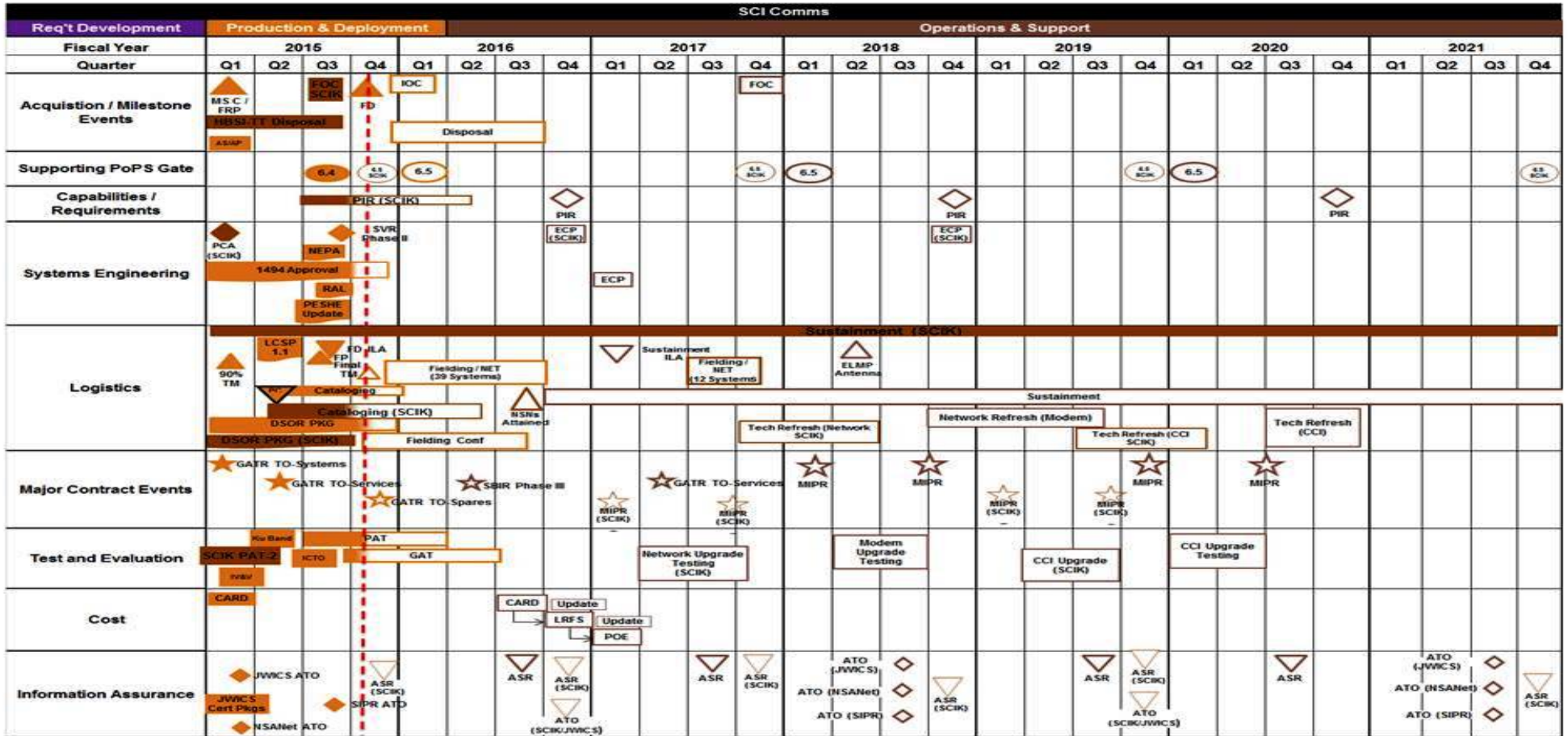
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206625M / USMC Intelligence/
Electronics Warfare Sys

Project (Number/Name)
2272 / Intel Command and Control (C2) Sys

SCI Comms FoS



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / USMC Intelligence/ Electronics Warfare Sys	Project (Number/Name) 2272 / Intel Command and Control (C2) Sys

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2272				
TCAC RAWS Procurement Decision (HW/SW Server Refresh)	2	2015	2	2015
TCAC CDS Procurement Decision	3	2015	3	2015
TCAC CDS Delivery Decision	3	2016	3	2016
TCAC RAWS Fielding Decision (HW/SW Server Refresh)	3	2016	3	2016
TCAC TWS Procurement Decision (HW/SW Laptop Refresh)	3	2016	3	2016
TCAC TWS Fielding Decision (HW/SW Laptop Refresh)	3	2017	3	2017
IAS Tier II Fielding Decision	1	2015	1	2015
IAS Advance Analytics Production Decision	1	2017	1	2017
IAS Tier III Procurement Decision	2	2017	2	2017
IAS Tier III Fielding Decision	1	2018	1	2018
CESAS MS C/ FRP	2	2015	2	2015
CESAS IOC	3	2016	3	2016
CESAS Fielding Decision	2	2016	2	2016
CIHEP Full Rate Production Decision TSM	2	2016	2	2016
CIHEP Delivery Decision TSM	4	2016	4	2016
CIHEP Full Rate Production Decision CHSCS	3	2016	3	2016
CIHEP Delivery Decision CSCS	2	2016	2	2016
CIHEP Delivery Decision CHSCS	1	2017	1	2021
CIHEP Full Rate Production Decision DPM	1	2017	1	2017
CIHEP Delivery Decision DPM	4	2017	4	2017
SCI COMMS MS C/FRP	1	2015	1	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206625M / <i>USMC Intelligence/ Electronics Warfare Sys</i>	Project (Number/Name) 2272 / <i>Intel Command and Control (C2) Sys</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SCI COMMS Fielding Decision	4	2015	4	2015
SCI COMMS FOC (SCIK)	3	2015	3	2015
SCI COMMS IOC (HBSI PT)	1	2016	1	2016
TRSS Delivery Decision MAGID II	1	2016	1	2016
TSCS TPCS Initial Delivery (LAV EW PIK)	1	2016	1	2016
TSCS TPCS Final Delivery (TPCS Tech Refresh for DNI and Server Sleeves)	4	2018	1	2019
TSCS RREP Initial Delivery (Workstations)	2	2016	3	2016
TSCS RREP Initial Delivery (BCK/DFK)	2	2016	3	2016
TSCS TPCS Delivery (Workstations)	3	2016	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0206629M I (U)Amphibious Assault Vehicle							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	87.940	45.110	38.020	-	38.020	58.303	19.012	8.771	5.823	Continuing	Continuing
2938: Amphibious Assault Vehicle	0.000	87.940	45.110	38.020	-	38.020	58.303	19.012	8.771	5.823	Continuing	Continuing

Note

NOTE: Prior funding is reflected in P.E. 0206623M/Project 0021.

A. Mission Description and Budget Item Justification

The Assault Amphibious Vehicle (AAV) program provides life-cycle support to ensure cost-effective combat readiness for the AAV Family of Vehicles (FOV). This is accomplished through engineering changes resulting from continuous review of sub-systems to maintain system supportability, safety, reduce total ownership costs, improve fleet readiness, address obsolescence issues, and improve vehicle survivability and performance.

B. Program Change Summary (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	96.207	48.535	49.414	-	49.414
Current President's Budget	87.940	45.110	38.020	-	38.020
Total Adjustments	-8.267	-3.425	-11.394	-	-11.394
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.425			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.092	0.000			
• SBIR/STTR Transfer	-3.175	0.000			
• Program Adjustments	0.000	0.000	-10.161	-	-10.161
• Rate/Misc Adjustments	0.000	0.000	-1.233	-	-1.233

Change Summary Explanation

The decrease (\$7.090M) from FY16 to FY17 represents acceleration of various AAV test efforts into FY16 and the completion of AAV intercom modernization and hydraulic analysis. The decrease also reflects fewer efforts in engineering technical services for Engineering Maintenance and Technical Support (EMTS) and decreased program management support due to the completion of the AAV prototype build in support of AAV Survivability Upgrade.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle				Project (Number/Name) 2938 / Amphibious Assault Vehicle			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2938: Amphibious Assault Vehicle	0.000	87.940	45.110	38.020	-	38.020	58.303	19.012	8.771	5.823	Continuing	Continuing
Quantity of RDT&E Articles		10	-	4	-	4	-	-	-	-		

A. Mission Description and Budget Item Justification

The Assault Amphibious Vehicle (AAV) program provides life-cycle support to ensure cost-effective combat readiness for the AAV Family of Vehicles (FOV). This is accomplished through engineering changes resulting from continuous review of sub-systems to maintain system supportability, safety, reduce total ownership costs, improve fleet readiness, address obsolescence issues, and improve vehicle survivability and performance. The AAV program also includes a survivability upgrade which will increase AAVP7A1 survivability and force protection while maintaining the required land and water mobility performance.

The decrease from FY16 to FY17 (\$7.090M) represents acceleration of various AAV test efforts into FY16 and the completion of AAV intercom modernization and hydraulic analysis. The decrease also reflects fewer efforts in engineering technical services for Engineering Maintenance and Technical Support (EMTS) and decreased program management support due to the completion of the AAV prototype build in support of AAV Survivability Upgrade.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	47.517	20.458	24.273	0.000	24.273
Articles:	10	-	4	-	4
Description: AAV Survivability Upgrade will improve the legacy AAV Force Protection capability. Improvements include improved underbelly protection, integrated blast mitigating seats, integrated spall liners, protected fuel storage, sponson armor, and selected improvements to maintain required water and land mobility. AAV modifications will provide Nonrecurring Engineering (NRE) and design for AAV safety, obsolescence, and performance improvement engineering change proposals.					
FY 2015 Accomplishments:					
-Continued nonrecurring engineering efforts to support AAV safety improvements, turret improvements, electrical modernization and intercoms.					
-Completed Critical Design Review. Down selected to prime contractor; awarded Engineering and Manufacturing Development (EMD) prototype build option (10).					
FY 2016 Plans:					
-Initiate prime contractor support for Developmental, Operational, and Live Fire Test and Evaluation (LFT&E).					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle	Project (Number/Name) 2938 / Amphibious Assault Vehicle

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Initiate nonrecurring engineering effort for 3d Modeling for AAVC7. FY 2017 Base Plans: -Complete prime contractor support for Developmental, Operational, and Live Fire Test and Evaluation (LFT&E). -Initiate the procurement of four test articles for Full Up System Level (FUSL) testing. -Initiate the Corrective Action Period (CAP) for EMD FY 2017 OCO Plans: N/A					
Title: Support Articles:	20.019	7.266	4.652	0.000	4.652
Description: Provide government engineering and technical support for AAV safety, obsolescence, and performance modifications, and Survivability Upgrade support. FY 2015 Accomplishments: -Continued nonrecurring engineering and design for AAV electrical and command and control (C2) systems modernization. -Continued to provide government engineering services in support of AAV safety, obsolescence, and performance modifications. -Initiated nonrecurring engineering and design for upgraded fire suppression system, and AAV obsolescence and performance modifications. -Provided material and travel associated with these efforts. FY 2016 Plans: -Continue nonrecurring engineering and design for AAV fire suppression system, electrical modernization, and command and control (C2) systems modernization. -Continue to provide technical and engineering services in support of AAV obsolescence and performance modifications. -Initiate nonrecurring engineering and design for AAV hydraulic modernization and fire suppression system and fuel cell day tank upgrade. -Provide material and travel associated with these efforts. FY 2017 Base Plans:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle	Project (Number/Name) 2938 / Amphibious Assault Vehicle				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Continue electrical modernization, and command and control (C2) systems modernization. - Continue to provide technical and engineering services in support of AAV obsolescence and performance modifications. - Complete nonrecurring engineering and design for AAV hydraulic modernization and AAV fire suppression system. - Provide material and travel associated with these efforts. <p>FY 2017 OCO Plans: N/A</p>						
Title: Test and Evaluation		1.483	11.838	5.059	0.000	5.059
		Articles:	-	-	-	-
<p>Description: Developmental Operational and Live Fire Test and Evaluation of safety improvements, upgrades, modifications and fact of life changes to ensure operational suitability and effectiveness of the AAV family of vehicles.</p> <p>FY 2015 Accomplishments: -Initiated government developmental, operational, and live fire test planning for survivability upgrade, Enhanced Applique Armor Kit (EAAK) Phase III and Electromagnetic Environmental Effects (E3) Co-site testing.</p> <p>FY 2016 Plans: -Initiate developmental testing for survivability upgrade and initiate operational assessment and live fire test and evaluation activities in support of survivability upgrade. -Complete EAAK Phase III and E3 Co-site testing.</p> <p>FY 2017 Base Plans: - Continue developmental testing, operational assessment and live fire test and evaluation activities in support of survivability upgrade. - Initiate hot and cold environmental testing for the survivability upgrade.</p> <p>FY 2017 OCO Plans: N/A</p>						
Title: Management and Engineering Technical Services		18.921	5.548	4.036	0.000	4.036
		Articles:	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle	Project (Number/Name) 2938 / Amphibious Assault Vehicle

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Management support services and technical support for program office and field activities.					
FY 2015 Accomplishments: - Continued program management services in support of Engineering Change Proposal (ECP) development, trade studies and analysis, supply chain and government property management in support of AAV sustainment and modification efforts. - Continued to provide program management services in support of AAV Survivability Upgrade.					
FY 2016 Plans: - Continue program management services in support of ECP development, trade studies and analysis, supply chain and government property management in support of AAV sustainment modification efforts. - Complete program management services in support of AAV Survivability Upgrade.					
FY 2017 Base Plans: - Continue program management services in support of ECP development, trade studies and analysis, supply chain and government property management in support of AAV sustainment modification efforts.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	87.940	45.110	38.020	0.000	38.020

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/2021: AAV Product Improvement Program	15.202	20.571	73.785	-	73.785	111.923	180.111	139.851	151.558	258.626	1,911.743

Remarks

D. Acquisition Strategy

The USMC competitively awarded two contracts in FY14 for development efforts in support of upgrading 392 Assault Amphibious Vehicles. Down-select to one contractor for manufacture of prototype vehicles occurred in February 2015. The program's main focus is on improving Marine force protection capabilities. To support the required capabilities, the Survivability Upgrade program will seek to incorporate Non-Developmental Items (NDI) and/or Commercial off the Shelf (COTS) solutions

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle	Project (Number/Name) 2938 / Amphibious Assault Vehicle

into the existing AAVP7A1 Reliability, Availability, Maintainability/Rebuild to Standard (RAM/RS). The acquisition strategy seeks to minimize cost and schedule, and maximize value, technology readiness, and commonality, while ensuring the selected manufacturer meets the capability attributes established for the AAVP7A1 RAM/RS. RDT&E funds competitive designs followed by contract options for Engineering and Manufacturing Development (EMD) and production. Initial Operational Capability (IOC) is scheduled for FY19.

E. Performance Metrics

Milestone Reviews:

Milestone C: 2nd quarter of FY17

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016				
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle				Project (Number/Name) 2938 / Amphibious Assault Vehicle								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Syst Design & Dev / EMD	C/FFP	MCSC : Quantico, VA	0.000	46.888	Feb 2015	15.217	May 2016	22.086	Apr 2017	-		22.086	Continuing	Continuing	Continuing	
Other Product Development	C/BA	Various : Various	0.000	0.629	Mar 2015	5.241	Feb 2016	2.187	Feb 2017	-		2.187	Continuing	Continuing	Continuing	
Subtotal			0.000	47.517		20.458		24.273		-		24.273	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Travel	Various	Various : Various	0.000	0.197	Oct 2014	0.464	Oct 2015	0.256	Oct 2016	-		0.256	Continuing	Continuing	Continuing	
In-House Technical Support	Various	Various : Various	0.000	19.822	Apr 2015	6.802	Feb 2016	4.396	Feb 2017	-		4.396	Continuing	Continuing	Continuing	
Subtotal			0.000	20.019		7.266		4.652		-		4.652	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Developmental Testing (DT)	Various	Various : Various	0.000	1.291	Mar 2015	5.013	Feb 2016	2.434	Mar 2017	-		2.434	Continuing	Continuing	Continuing	
Operational Testing (OT)	WR	MCOTE A : Quantico, VA	0.000	0.182	May 2015	4.599	May 2016	0.000	Jan 2017	-		0.000	0.000	4.781	-	
Live Fire Test and Evaluation (LFT&E)	Various	Various : Various	0.000	0.010	Jul 2015	2.226	Dec 2015	2.625	Dec 2016	-		2.625	0.000	4.861	-	
Subtotal			0.000	1.483		11.838		5.059		-		5.059	-	-	-	

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

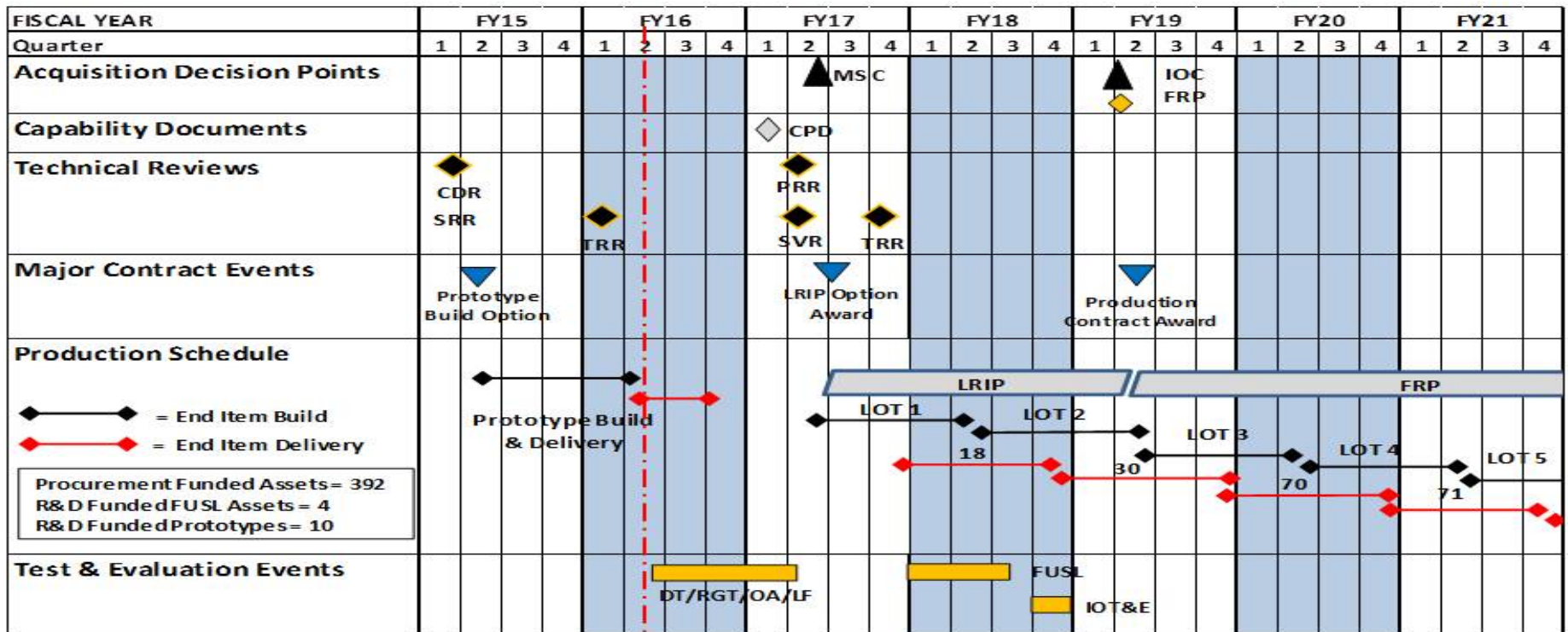
Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0206629M / (U)Amphibious Assault
Vehicle

Project (Number/Name)
2938 / Amphibious Assault Vehicle

PB-17 SCHEDULE AAV SURVIVABILITY UPGRADE



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206629M / (U)Amphibious Assault Vehicle	Project (Number/Name) 2938 / Amphibious Assault Vehicle

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2938				
CDR	1	2015	2	2015
Prototype Build Option	2	2015	2	2016
Developmental Test and Evaluation	2	2016	2	2017
MS C	2	2017	2	2017
LRIP Option Award	3	2017	3	2017
LRIP	3	2017	2	2019
IOT&E	4	2018	4	2018
Full Rate Production Contract Award	2	2019	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	350.659	36.361	71.016	56.285	-	56.285	36.569	33.277	0.305	0.322	0.000	584.794
0457: <i>AIM-9X</i>	350.659	36.361	71.016	56.285	-	56.285	36.569	33.277	0.305	0.322	0.000	584.794

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 442

A. Mission Description and Budget Item Justification

The AIM-9X (Sidewinder) short-range air-to-air missile is a long term evolution of the AIM-9 series of fielded missiles. The AIM-9X missile program provides a launch and leave, air combat munition that uses passive infrared (IR) energy for acquisition and tracking of enemy aircraft and complements the Advanced Medium Range Air-to-Air Missile (AMRAAM). Air superiority in the short-range air-to-air missile arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X employs several components common with the AIM-9M (fuze, rocket motor and warhead). Anti-Tamper features have been incorporated to protect improvements inherent in this design. AIM-9X is a Post Milestone C, Acquisition Category IC joint service program with Navy lead.

The Block II program has completed Independent Operational Testing and found to be Operationally Effective and Suitable. The program achieved USN Initial Operational Capability in March 2015 and received Full Rate Production decision in August 2015. The first Full Rate Production Lot contract was awarded in September 2015. This budget line will continue technical refresh of critical obsolete components, implement cost reduction initiatives, improve insensitive munitions performance, correct deficiencies, and increase capabilities through software enhancements, and conduct testing to ensure platform integration onto threshold US Navy aircraft.

This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	37.258	76.016	60.772	-	60.772
Current President's Budget	36.361	71.016	56.285	-	56.285
Total Adjustments	-0.897	-5.000	-4.487	-	-4.487
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.897	0.000			
• Rate/Misc Adjustments	0.000	0.000	-4.487	-	-4.487

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	
Change Summary Explanation Decrease in Tactical Aim Missiles by \$2.341M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015. Schedule: 1. AIM-9X Block II schedule has been updated to match the format presented in congressional staffer briefs. 2. The System Improvement Program II contract has been extended 9 months to complete software deficiency identified during AIM-9X Block II Operational Test (OT-C1). 3. The System Improvement Program III contract has been extended as a result of extended AIM-9X Block II Operational Test (OT-C1), and allows completion of the hardware redesigns and software rehosting onto tech refresh replacement hardware. 4. Missile software version 9.4 Development Testing (DT-D1) extension to 4th QTR 2017 reflect schedule change as a result of AIM-9X Block II Operational Testing (OT-C1) schedule adjustments for missile software version 9.3. 5. Missile software version 9.4 Integration Testing (IT-D1) start date has been moved to the end of DT-D1 to verify technical requirements and performance thresholds of the performance specification and statement of functionality (SOF) and to verify the AIM-9X Block II missile system is ready for Follow-On Operational Test and Evaluation (FOT&E, OT-D1). 6. Operation Testing OT-D1 start date has been moved to the end of IT-D1 to share results with DT and minimize program cost. 7. OT-D1 end date has moved in to reflect anticipated release of version 9.4 software to the fleet. 8. Missile software version 10.4 Development Testing (DT-D2) delay to 1st QTR FY2019 reflects schedule change as a result of AIM-9X Block II Operational Testing (OT-C1) and OT-D1, to allow completion of software rehost development onto Lot 19 hardware. Cost: FY17 funding decrease reflects completion of threshold platform software integration requirements with the AIM-9X Block II program. Completion of one-time USN test hardware materials buy in FY16 for the AIM-9X BLK II SIP III program. Technical: The program strategy is to first redesign the control actuation system (CAS) battery, along with the AIM-9X Block II Plus, and incorporate it into the Lot 17 (FY 2017) production missile. Next, the program will complete AIM-9X Block II software improvements (software version 9.4) and release it into Lot 18 (FY 2018) and prior missiles. The software will provide improved infrared counter-countermeasures, correct partial degraded cueing, improved lock on after launch capability, improve small target acquisition, and provide surface attack capability. Finally, the program will redesign the inertial measurement unit, the dome, and the guidance unit processor and incorporate these hardware changes into the Lot 19 (FY 2019) production missile. This last item will include a software re-host onto the weapon system (software version 10.4) to ensure new components do not degrade overall system performance. The guidance unit processor is the critical component to ensure continued production of the missile system and avoid production line gaps after Lot 18.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / <i>AIM-9X</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0457: <i>AIM-9X</i>	350.659	36.361	71.016	56.285	-	56.285	36.569	33.277	0.305	0.322	0.000	584.794
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 442

A. Mission Description and Budget Item Justification

AIM-9X is a long-term evolution of the AIM-9, a fielded system, qualifying this as a research category operational systems development. The AIM-9X short range Air-to-Air missile modification program provides a launch and leave, air combat munition that uses passive Infra-Red (IR) energy for acquisition and tracking of enemy aircraft and complements the Advanced Medium Range Air-to-Air Missile. Air superiority in the short range Air-to-Air Missile arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X employs several components common with the AIM-9M (fuze, rocket motor and warhead). The AIM-9X Block II missile is critical to project power and win decisively in accordance with the Fiscal Year 2015 Defense Planning Guidance and CNO's Navigation Plan 2015-2019. The missile is essential to Pacific Command plans to counter threats employed by advanced Digital Radio Frequency Memory (DRFM) electronic attack, cruise missiles, and Unmanned Aerial Vehicles.

This line item completes the operational testing of the AIM-9X Block II for Full Rate Production decision, as well as continues Technical Refresh of components and software to meet threshold requirements of the capabilities production document. Specifically, the program will redesign, develop and integrate obsolete components, implement cost reduction initiatives, enhance insensitive munitions performance and incrementally improve operational flight software to fully utilize capabilities of the missile.

The program strategy is to first redesign the control actuation system (CAS) battery, along with the AIM-9X Block II Plus, and incorporate it into the Lot 17 (FY 2017) production missile. Next, the program will complete AIM-9X Block II software improvements (software version 9.4) and release it into Lot 18 (FY 2018) and prior missiles. The software will provide improved infrared counter-countermeasures, correct partial degraded cueing, improved lock on after launch capability, improve small target acquisition, and provide surface attack capability. Finally, the program will redesign the inertial measurement unit, the dome, and the guidance unit processor and incorporate these hardware changes into the Lot 19 (FY 2019) production missile. This last item will include a software re-host onto the weapon system (software version 10.4) to ensure new components do not degrade overall system performance. The guidance unit processor is the critical component to ensure continued production of the missile system and avoid production line gaps after Lot 18.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	34.233	64.791	50.683	0.000	50.683
Articles:	-	-	-	-	-
Description: Continuation of Primary Hardware Development/Pre-Planned Product Improvement (Tech Refresh) efforts for the AIM-9X weapon system. This includes Systems Engineering / Program management, as well as support required, to ensure AIM-9X missile integration with threshold US Navy aircraft platforms.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / AIM-9X
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

This also includes efforts to redesign missile components in order to resolve Block II component obsolescence to ensure missile producibility beyond LOT 19, implement cost reduction initiatives, and to comply with the Insensitive Munitions (IM) requirements as established by Joint Requirements Oversight Council memo dated 11 February 2009.

FY 2015 Accomplishments:

Implement Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Specific component improvements include the dome, the Inertial Measurement Unit, the processor, the control actuation system and battery, and associated operational flight software updates. In addition this line funds improvements to enhance insensitive munitions (IM) compliance. Specific components include the warhead and missile container.

FY 2016 Plans:

Continue Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Continue to develop v9.4 Block II software improvements to utilize full capability of the missile. Continue to develop missile hardware design improvements necessary to enhance IM performance.

FY 2017 Base Plans:

Continue Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Continue to develop v9.4 Block II software improvements to utilize full capability of the missile. Continue to develop missile hardware design improvements necessary to enhance IM performance.

FY 2017 OCO Plans:

N/A

Title: Test and Evaluation

Articles:

Description: Test and Evaluation (T&E) and associated governmental support required to ensure the AIM-9X missile integration with threshold US Navy aircraft platforms (F/A-18A+/C/D/E/F). Beginning in FY 2016 the program will join in with the US Air Force efforts in testing the next tech refresh version of software improvements to the missile, Operation Flight Software version 9.4.

FY 2015 Accomplishments:

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p align="right"><i>Articles:</i></p>	1.872	6.000	5.383	0.000	5.383
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / <i>AIM-9X</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete OT and await final Initial Operational Test & Evaluation (OT-C1) and Beyond LRIP reports. Continue to develop and finalize T&E requirements for Block II program CPD. FY 2016 Plans: Begin Developmental Testing (DT-D1) and Integrated Testing (DT/IT-D1) of Operational Flight Software version 9.4 including improvements associated with integrating the F/A-18 aircraft to utilize full capability of the Block II missile. FY 2017 Base Plans: Complete Developmental Testing and Integrated Testing (DT/IT-D1) of Operational Flight Software version 9.4 including improvements associated with further integrating the F/A-18 aircraft to utilize full capability of the Block II missile. FY 2017 OCO Plans: N/A					
Title: Management Services Description: Transportation / Travel for AIM-9X effort. FY 2015 Accomplishments: Continue funding transportation and travel costs associated with supporting the AIM-9X missile program. FY 2016 Plans: Continue funding transportation and travel costs associated with supporting the AIM-9X missile program. FY 2017 Base Plans: Continue funding transportation and travel costs associated with supporting the AIM-9X missile program. FY 2017 OCO Plans: N/A	0.256 -	0.225 -	0.219 -	0.000 -	0.219 -
Articles:					
Accomplishments/Planned Programs Subtotals	36.361	71.016	56.285	0.000	56.285

C. Other Program Funding Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• WPN 2209: <i>Sidewinder</i>	68.178	92.497	70.912	-	70.912	79.542	78.837	82.048	89.589	801.020	2,001.252

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / <i>AIM-9X</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF 3479: <i>Sidewinder</i>	129.121	198.247	127.438	-	127.438	114.200	122.340	125.299	118.454	537.349	2,287.096
• RDTE, AF 41: <i>Sidewinder</i>	28.820	43.360	52.898	-	52.898	44.751	14.801	13.361	13.597	0.000	512.461

Remarks

D. Acquisition Strategy

Milestone C decision for LRIP was held June 24, 2011. The program received USN Initial Operational Capability (IOC) in March 2015 and Full Rate Production (FRP) Approval in August 2015 followed by contract award for FRP-1 in September 2015. The program will modify the production contract in June 2016 to award option year 1 for FRP-2 and add option year 2 for FRP-3. Option year 3 will be awarded in February 2017.

E. Performance Metrics

AIM-9X Block II:

1. Completed AIM-9X Block II Initial Operational Testing and Evaluation and Beyond LRIP reports(2Q FY15).
2. Complete AIM-9X Block II USN Initial Operational Capability (2Q FY15) and Full Rate Production Decision (4Q FY15).

AIM-9X Block II Tech Refresh:

1. Complete Lot 17 Cut In Engineering Change Proposal to incorporate redesigned control actuation system battery and Block II plus into production (1Q FY17).
2. Complete Development Testing for software v9.4 improvements (4Q FY17).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / <i>AIM-9X</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware & Software Development	SS/CPFF	Raytheon Missile Systems : Tucson, AZ	20.632	22.721	Nov 2015	53.461	Mar 2016	45.179	Mar 2017	-		45.179	49.603	191.596	197.222
Aircraft Integration - Contract	C/CPFF	The Boeing Company : St. Louis, MO	9.339	0.000	Dec 2015	2.720	Feb 2016	1.677	Feb 2017	-		1.677	0.432	14.168	15.731
Aircraft Integration - USG	WR	NAWCWD : China Lake, CA	8.553	11.257	Nov 2014	3.719	Jan 2016	0.112	Dec 2016	-		0.112	0.000	23.641	-
USG Systems Engineering & Project Management Support	WR	NAWC AD : Patuxent River, MD	0.000	0.255	Dec 2014	2.206	Dec 2015	0.700	Dec 2016	-		0.700	0.700	3.861	-
USG Systems Engineering & Project Management Support	WR	NAWCWD : China Lake, CA	0.000	0.000		2.485	Jan 2016	3.015	Dec 2016	-		3.015	10.493	15.993	-
Prior Year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	250.910	0.000		0.000		0.000		-		0.000	0.000	250.910	-
Subtotal			289.434	34.233		64.591		50.683		-		50.683	61.228	500.169	-

Remarks

- Total prior years - FY95 and prior under PE 0603715D.
- The Primary Hardware & Software decrease from FY16 to FY17 reflects completion of one-time USN test hardware materials buy in FY16 for the AIM-9X BLK II SIP III program.
- The decrease in Aircraft integration between FY16 to FY17 reflects completion of threshold platform software integration requirements with the AIM-9X Block II program.
- The decrease in USG Systems Engineering & Project Management from FY16 to FY17 reflects a one time USN government lab test support requirement to ensure tech refresh improvements are incorporated into the final hardware and software design.
- Insensitive Munitions Risk Reductions activities have been realigned from primary hardware line to USG Systems Engineering China Lake.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Support Costs no longer funded in the FYDP	Various	Various : Various	0.949	0.000		0.000		0.000		-		0.000	0.000	0.949	0.949

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / AIM-9X
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.949	0.000		0.000		0.000		-		0.000	0.000	0.949	0.949

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Oper Test & Eval	WR	COMOPTEVFOR : Norfolk, VA	8.745	0.439	Jun 2015	0.440	Mar 2016	0.413	Mar 2017	-		0.413	4.680	14.717	-
Development Testing	WR	NAWCWD : China Lake, CA	0.000	1.433	Nov 2014	5.760	Jan 2016	4.970	Dec 2016	-		4.970	4.087	16.250	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	40.382	0.000		0.000		0.000		-		0.000	0.000	40.382	-
Subtotal			49.127	1.872		6.200		5.383		-		5.383	8.767	71.349	-

Remarks

Decrease in Development Testing from FY16 to FY17 reflects completion of DT-D1 efforts at NAWCWD China Lake to evaluate tech refresh improvements to missile hardware and software in accordance with the test and evaluation master plan (TEMP)revision e.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Transportation - Material	WR	NAVAIR : Patuxent River, MD	0.327	0.075	Oct 2014	0.075	Oct 2015	0.075	Oct 2016	-		0.075	0.150	0.702	-
Travel - Obligation throughout the year	WR	NAWCAD : Patuxent River, MD	2.789	0.181	Oct 2014	0.150	Oct 2015	0.144	Oct 2016	-		0.144	0.328	3.592	-
Prior Year Mgmt cost no longer funded in the FYDP	Various	Various : Various	8.033	0.000		0.000		0.000		-		0.000	0.000	8.033	-
Subtotal			11.149	0.256		0.225		0.219		-		0.219	0.478	12.327	-

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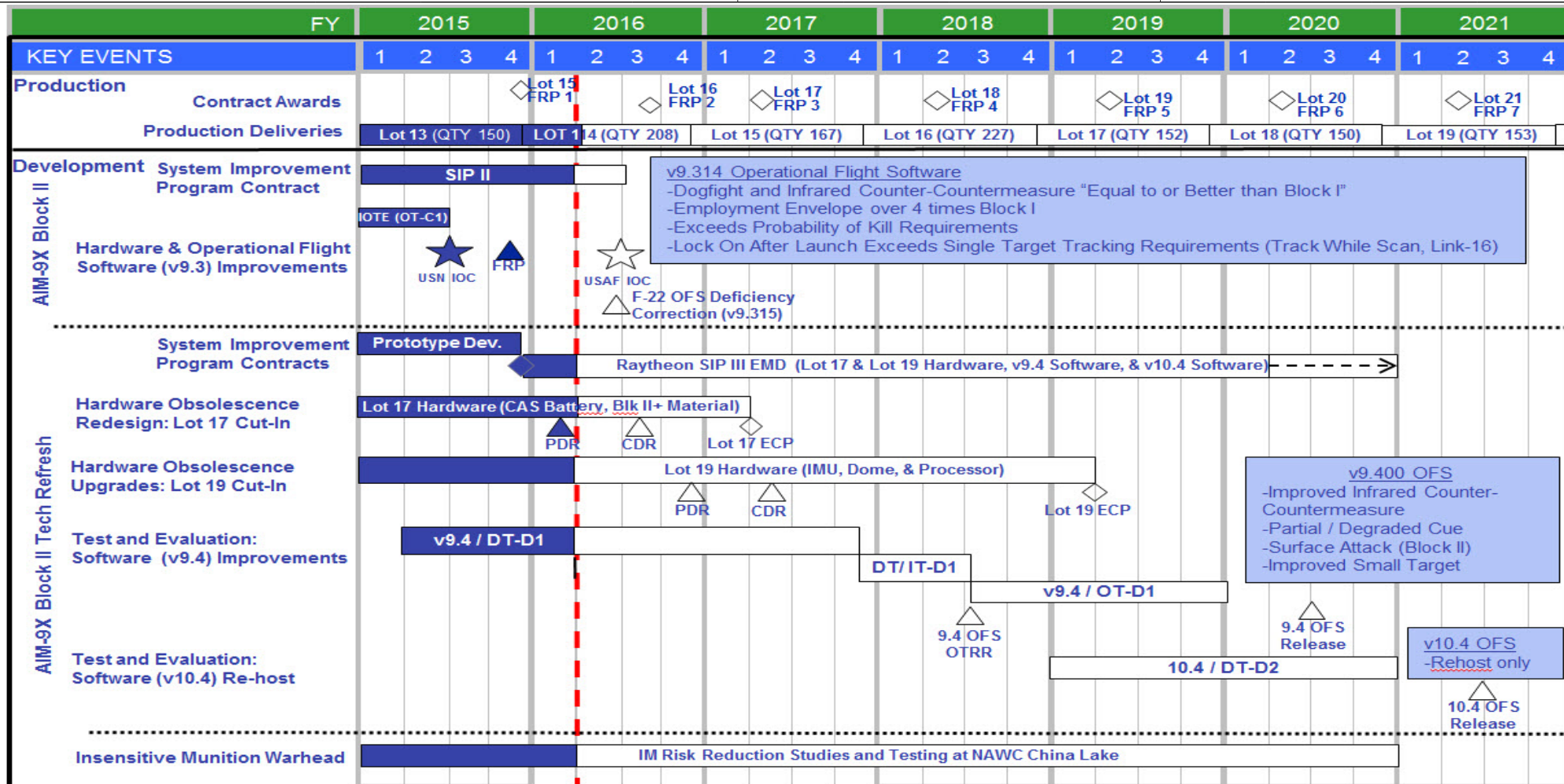
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0207161N / Tactical Aim Missiles

Project (Number/Name)
0457 / AIM-9X



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / AIM-9X
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TACTICAL AIM MISSILES				
Production Milestones - Block II: Contract Awards: Lot 15 (FRP 1): QTY 167	4	2015	4	2015
Production Milestones - Block II: Contract Awards: Lot 16 (FRP 2): QTY 227	3	2016	3	2016
Production Milestones - Block II: Contract Awards: Lot 17 (FRP 3): QTY 152	2	2017	2	2017
Production Milestones - Block II: Contract Awards: Lot 18 (FRP 4): QTY 150	2	2018	2	2018
Production Milestones - Block II: Contract Awards: Lot 19 (FRP 5): QTY 153	2	2019	2	2019
Production Milestones - Block II: Contract Awards: Lot 20 (FRP 6): QTY 153	2	2020	2	2020
Production Milestones - Block II: Contract Awards: Lot 21 (FRP 7): QTY 150	2	2021	2	2021
Production Deliveries: Low Rate Initial Production 3 (WPN) QTY 150	1	2015	4	2015
Production Deliveries: Low Rate Initial Production 4 (WPN) QTY 208	4	2015	4	2016
Production Deliveries: Lot 15 (FRP 1) QTY 167	4	2016	4	2017
Production Deliveries: Lot 16 (FRP 2) QTY 227	4	2017	4	2018
Production Deliveries: Lot 17 (FRP 3) QTY 152	4	2018	4	2019
Production Deliveries: Lot 18 (FRP 4) QTY 150	4	2019	4	2020
Production Deliveries: Lot 19 (FRP 5) QTY 153	4	2020	4	2021
AIM-9X Block II: System Improvement Program Contract Award: System Improvement Program II Engineering Manufacturing Development Contract	1	2015	2	2016
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Operational Test (OT-C1)	1	2015	2	2015
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Operational Test Report	2	2015	3	2015
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Navy Initial Operational Capability	2	2015	2	2015
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Full Rate Production Milestone Decision	4	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / AIM-9X
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Air Force Initial Operational Capability	3	2016	3	2016
AIM-9X Block II Tech Refresh: Tech Refresh Development Contracts: System Improvement Program III Prototype Development Contract	1	2015	4	2015
AIM-9X Block II Tech Refresh: Tech Refresh Development Contracts: System Improvement Program III Engineering Manufacturing Development Contract	4	2015	4	2020
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 17 Cut In: Lot 17 Hardware (CAS Battery & Block 2+)	1	2015	1	2017
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 17 Cut In: Lot 17 Hardware Cut-In Preliminary Design Review	1	2016	1	2016
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 17 Cut In: Lot 17 Hardware Cut-In Critical Design Review	3	2016	3	2016
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 17 Cut In: Lot 17 Hardware Cut-In Engineering Change Proposal	1	2017	1	2017
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 19 Cut In: Hardware (IMU, Dome & Processor)	1	2015	1	2019
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 19 Cut In: Lot 19 Hardware Cut-In Preliminary Design Review	4	2016	4	2016
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 19 Cut In: Lot 19 Hardware Cut-In Critical Design Review	2	2017	2	2017
AIM-9X Block II Tech Refresh: Hardware Obsolescence Redesign: Lot 19 Cut In: Lot 19 Hardware Cut-In Engineering Change Proposal	1	2019	1	2019
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v9.4) Improvements: Development Testing	2	2015	4	2017
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v9.4) Improvements: Development Test / Integrated Testing	4	2017	3	2018
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v9.4) Improvements: Operational Testing	3	2018	4	2019
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v9.4) Improvements: Software v9.4 Release	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207161N / <i>Tactical Aim Missiles</i>	Project (Number/Name) 0457 / <i>AIM-9X</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v10.x) Rehost: Software v10.4 Development Testing	1	2019	4	2020
AIM-9X Block II Tech Refresh: Test and Evaluation: Software (v10.x) Rehost: Software v10.4 Release	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	119.194	9.820	32.172	40.350	-	40.350	46.349	32.347	32.729	33.394	104.296	450.651
0981: AMRAAM	119.194	9.820	32.172	40.350	-	40.350	46.349	32.347	32.729	33.394	104.296	450.651

Program MDAP/MAIS Code: 185

A. Mission Description and Budget Item Justification

This joint Navy/Air Force program is structured in response to the Joint Service Operational Requirement and Mission Element Need Statement to develop an air superiority air-to-air missile with significant improvements in operational utility and combat effectiveness. This program supports the integration of the Advanced Medium Range Air-to-Air Missile (AMRAAM) into Navy aircraft with analysis of Navy unique applications, aircraft missile integration tasks, product improvement efforts including missile software upgrade development and procurement of hardware to support Navy test and evaluation tasks.

This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.210	32.172	44.094	-	44.094
Current President's Budget	9.820	32.172	40.350	-	40.350
Total Adjustments	-0.390	0.000	-3.744	-	-3.744
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.193	0.000			
• SBIR/STTR Transfer	-0.197	0.000			
• Rate/Misc Adjustments	0.000	0.000	-3.744	-	-3.744

Change Summary Explanation

Decrease in AMRAAM by \$1.710M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

The FY 2017 funding request was reduced by \$0.732 million to account for the availability of prior year execution balances.

FY17 includes funding for improved missile performance at longer range, increased survivability, improved lethality, and continues Advanced AIM-120C7 & AIM-120D Electronic Protection Improvement Program efforts through software development, simulation and test efforts.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0207163N / AMRAAM				Project (Number/Name) 0981 / AMRAAM			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0981: AMRAAM	119.194	9.820	32.172	40.350	-	40.350	46.349	32.347	32.729	33.394	104.296	450.651
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This joint Navy/Air Force program is structured in response to the Joint Service Operational Requirement and Mission Element Need Statement to develop an air superiority air-to-air missile with significant improvements in operational utility and combat effectiveness. This program supports the integration of the Advanced Medium Range Air-to-Air Missile (AMRAAM) into Navy aircraft with analysis of Navy unique applications, aircraft missile integration tasks, product improvement efforts including missile software upgrade development and procurement of hardware to support Navy test and evaluation tasks. Funding in FY15 through FY21 supports Navy unique Test & Evaluation for Navy fielding of the AIM-120C7 and AIM-120D Electronic Protection Improvement Program (EPIP) capability.

The Cost To Complete should be \$104.057M.
The Total Cost should be \$452.278M.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Test and Evaluation	7.599	4.867	5.485	0.000	5.485
Articles:	-	-	-	-	-
Description: Test and Evaluation (T&E) and associated governmental support required to ensure AIM-120 missile integration with threshold US Navy aircraft platforms (F/A-18 C/D/E/F and Joint Strike Fighter).					
FY 2015 Accomplishments: Completed AIM-120D Operational Test (OT) and certified the AIM-120D for use on Navy F/A-18 E/F. Achieved Initial Operation Capability (IOC) and Fleet Release of the AIM-120D. Provided necessary test equipment and supported AIM-120D OT on the F/A-18 A/C/D. Completed certification on the F/A-18 A/C/D. Conducted Test Readiness Board and successfully executed captive carry developmental test (DT) flights for System Improvement Program (SIP). Supplied support and test resources for a successful missile shot of SIP-1 AIM-120D which incorporated improvements identified in the baseline OT Report. Completed fielding efforts and required testing of EPIP Basic C-7. Supported ongoing EPIP C3/4/5/6 OT&E test events for future fielding.					
FY 2016 Plans: Complete AIM-120C7 EPIP Advanced Tape 1 DT, complete a DT/OT transition report and the AIM-120C7 EPIP Advanced Tape 1 Operational Test Readiness Review (OTRR). Field the AIM-120C3 through 6 EPIP Basic capability. Continue building test infrastructure to support SIP-1 test events and large force exercises. Provide					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>test resources and test assets for EPIP Advanced Tape 2 DT. Complete AIM-120D SIP-1 IT/OT test events, supply inputs to the OT test report and generate the fielding decision for SIP-1 on F/A-18 aircraft.</p> <p>FY 2017 Base Plans: Continue to provide test asset and support for AIM-120D SIP-2, AIM-120C7 EPIP Advanced Tape 1 and 2 activities. Provide test and evaluation inputs to the EPIP Advanced Tape 2 and SIP-2 designs and support the respective Critical Design Reviews. Provide necessary documentation and provide test results for SIP-2 DT and EPIP Advanced Tape 2 test events. Conduct OTRR for SIP-2 and EPIP Advanced Tape 2. Certify and field EPIP Advanced Tape 1 on F/A-18.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Identify potential improvements</p> <p align="right">Articles:</p> <p>Description: Engineering support of AMRAAM, including investigation and analysis of technologies that offer potential improvements in AMRAAM lethality/performance and compatibility with related weapons systems.</p> <p>FY 2015 Accomplishments: Continued engineering support of AMRAAM, to include investigation and analysis of technologies that offer potential improvements in AMRAAM lethality/performance and compatibility with related weapons systems.</p> <p>FY 2016 Plans: Continue engineering support of AMRAAM, to include investigation and analysis of technologies that offer potential improvements in AMRAAM lethality/performance and compatibility with related weapons systems.</p> <p>FY 2017 Base Plans: Continue engineering support of AMRAAM, to include investigation and analysis of technologies that offer potential improvements in AMRAAM lethality/performance and compatibility with related weapons systems.</p> <p>FY 2017 OCO Plans: N/A</p>	0.171	0.223	0.227	0.000	0.227
Articles:	-	-	-	-	-
<p>Title: System Improvement Program (SIP) Efforts</p> <p align="right">Articles:</p> <p>Description: Continuation of System Improvement Program (SIP)/Technical Maturity and Risk Reduction (TMRR) efforts for the AMRAAM weapon system. These include systems engineering, program management,</p>	2.050	27.082	34.638	0.000	34.638
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
missile software and/or hardware upgrades to increase capability, survivability, lethality, as well as aircraft Operational Flight Profile updates on a recurring basis. EPIP Advanced Tape 1 and Tape 2 capability improvements on the C7 missile variant will be incorporated with AIM-120D SIP-2 and 3 software updates.					
<i>FY 2015 Accomplishments:</i> AIM-120D Initial Operational Capability declared 05 Jan 15. Fielded EPIP Basic capabilities in the AIM-120 C7 missile variant (Tape 9 Rev 4). Executed Navy OT events for EPIP Basic C-3 through C6 (Tape 7 Rev 29). Continued AIM-120D SIP-1 design implementation and conducted successful SIP-1 missile firing with an AIM-120D on an F/A-18E aircraft. Completed SIP-1 OTRR. Completed the SIP-2 risk reduction phase and conducted preliminary design reviews for SIP-2 and AIM-120C7 EPIP Advanced Tape 2 programs. Awarded the SIP-2 Engineering and Manufacturing Development (EMD) contract and transitioned to integrated software design. Released the Request for Proposal for SIP-3 TMRR and conducted the Solution Analysis / Candidate Selection Process for planned SIP-3 deficiencies corrections and software candidates to keep pace with the evolving threats.					
<i>FY 2016 Plans:</i> Continue infrastructure investments to support AIM-120D SIP-1, 2, 3 and AIM-120C EPIP activities. Develop an AMRAAM Data Recorder (ADR) to replace the Inflight Data Acquisition Pod (IDAP), which has become unreliable and obsolete, along with additional test equipment to meet SIP-2 and SIP-3 requirements. Complete SIP-1 OT and deploy the first AIM-120D improvement software increment to the Navy AMRAAM inventory. Continue SIP-2 EMD acquisition activities and conduct a critical design review. Award SIP-3 TMRR and begin EMD contracting efforts.					
<i>FY 2017 Base Plans:</i> Complete EPIP Advanced Tape 1 OT events and field in the C7 missile variant. Complete AIM-120C7 EPIP Advanced Tape 2 DT efforts and enter into OT. Continue AIM-120D SIP-2 EMD DT flight testing and conduct Functional Configuration Audit/Test Readiness Board and OTRR. Award SIP-3 EMD contract.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	9.820	32.172	40.350	0.000	40.350

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• WPN/ 2206: AMRAAM	2.165	202.773	204.697	-	204.697	261.825	272.341	268.903	274.092	908.404	4,534.258
• MPAF/3479: AMRAAM	329.600	390.112	360.398	-	360.398	449.153	467.062	477.766	473.336	1,276.899	12,606.711
• RDTE,AF/673777: AMRAAM	82.195	46.160	61.044	-	61.044	61.612	65.733	66.910	68.115	65.000	896.658

Remarks

D. Acquisition Strategy

AMRAAM production procurements will continue across the FYDP with periodic pre-planned technical design refreshes and Value Engineering Change Proposals. The Air Dominance Division has implemented a multiple year production contract strategy (basic contract with 2 priced options).

AMRAAM's Acquisition Program Baseline (APB) was updated on 28 Oct 2015.

E. Performance Metrics

Meeting cost, schedule, performance, funding and life cycle sustainment requirements in accordance with the Acquisition Program Baseline.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0207163N / AMRAAM					Project (Number/Name) 0981 / AMRAAM				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hdw Development (EGLIN)	SS/CPAF	RAYTHEON COMPANY : Tucson AZ	45.066	1.098	Jan 2015	22.519	Jan 2016	29.001	Jan 2017	-		29.001	180.946	278.630	278.630
Award Fees (EGLIN)	SS/CPAF	RAYTHEON COMPANY : Tucson AZ	6.456	0.194	Jan 2015	3.974	Jan 2016	5.123	Jan 2017	-		5.123	31.911	47.658	47.658
Primary Hdw Development (NAWCAD)	WR	NAWCAD : Patuxent River MD	2.457	0.585	Nov 2014	0.422	Nov 2015	0.437	Nov 2016	-		0.437	3.273	7.174	-
Primary Hdw Development (NAWCWD)	WR	NAWCWD : China Lake CA	0.993	0.088	Dec 2014	0.084	Dec 2015	0.000		-		0.000	0.000	1.165	-
Prior Years Dev Cost no longer funded in the FYDP	Various	Various : Various	22.839	0.000		0.000		0.000		-		0.000	0.000	22.839	-
Subtotal			77.811	1.965		26.999		34.561		-		34.561	216.130	357.466	-

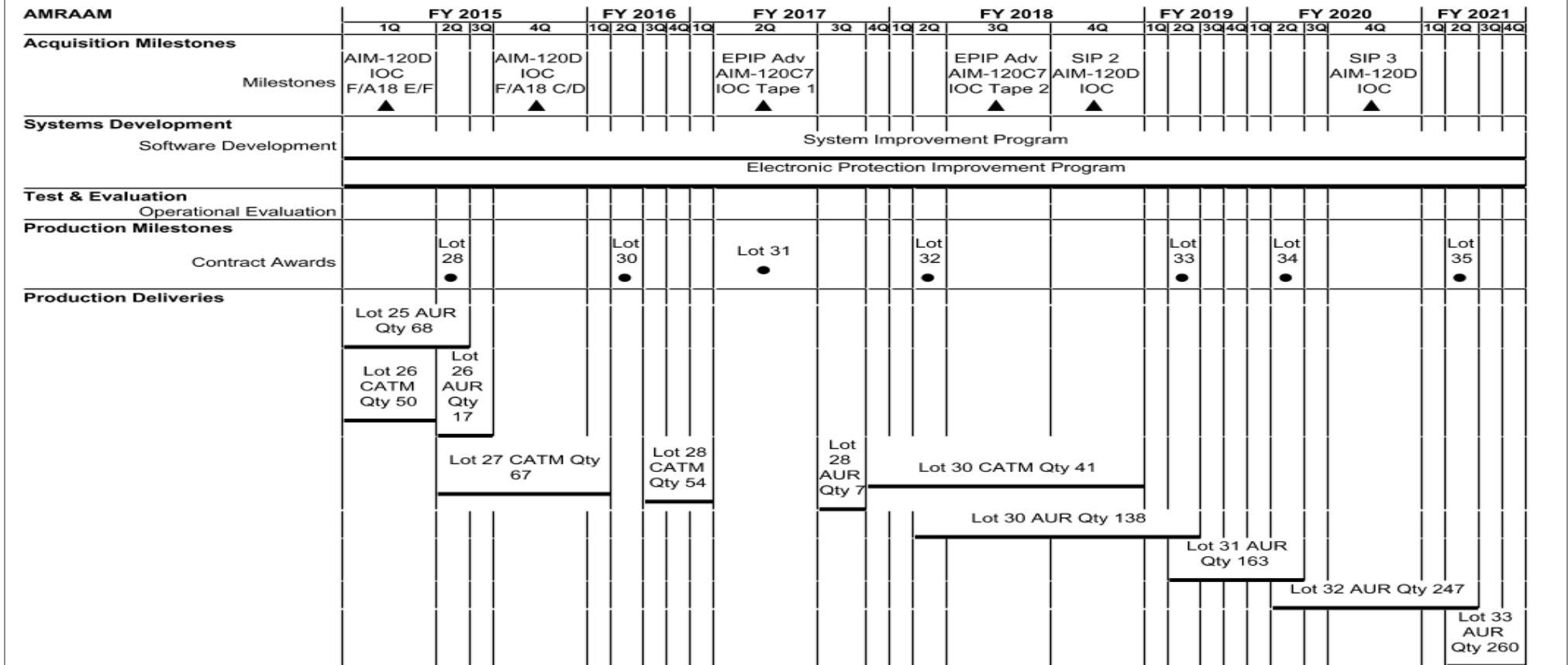
Remarks
Remarks: Percentage of award fees actually awarded in past award fee periods is 14.3%.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support (NSMA)	WR	NAVY SYST MGT ACT : Arlington VA	3.646	0.171	Jan 2015	0.223	Jan 2016	0.227	Jan 2017	-		0.227	1.705	5.972	-
Prior Years Support costs no longer funded in the FYDP	Various	Various : Various	19.295	0.000		0.000		0.000		-		0.000	0.000	19.295	-
Subtotal			22.941	0.171		0.223		0.227		-		0.227	1.705	25.267	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AMRAAM				
Acquisition Milestones: Milestones: SIP 2 AIM-120D IOC	4	2018	4	2018
Acquisition Milestones: Milestones: SIP 3 AIM-120D IOC	4	2020	4	2020
Acquisition Milestones: Milestones: EPIP Advanced AIM-120C7 IOC Tape 1	2	2017	2	2017
Acquisition Milestones: Milestones: EPIP Advanced AIM-120C7 IOC Tape 2	3	2018	3	2018
Acquisition Milestones: Milestones: AIM-120D IOC F/A18 E/F (Threshold)	1	2015	1	2015
Acquisition Milestones: Milestones: AIM-120D IOC F/A18 C/D	4	2015	4	2015
Systems Development: Software Development: System Improvement Program Start (P3I Follow-0n)	1	2015	4	2021
Systems Development: Software Development: Electronic Protection Improvement Program	1	2015	4	2021
Production Milestones: Contract Awards: Production Lot 28 Contract Award	2	2015	2	2015
Production Milestones: Contract Awards: Production Lot 30 Contract Award	2	2016	2	2016
Production Milestones: Contract Awards: Production Lot 31 Contract Award	2	2017	2	2017
Production Milestones: Contract Awards: Production Lot 32 Contract Award	2	2018	2	2018
Production Milestones: Contract Awards: Production Lot 33 Contract Award	2	2019	2	2019
Production Milestones: Contract Awards: Production Lot 34 Contract Award	2	2020	2	2020
Production Milestones: Contract Awards: Production Lot 35 Contract Award	2	2021	2	2021
Production Deliveries: Production Lot 25 AUR Qty 68	1	2015	2	2015
Production Deliveries: Production Lot 26 AUR Qty 17	2	2015	3	2015
Production Deliveries: Production Lot 26 CATM Qty 50	1	2015	1	2015
Production Deliveries: Production Lot 27 CATM Qty 67	2	2015	1	2016
Production Deliveries: Production Lot 28 AUR Qty 7	3	2017	3	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Deliveries: Production Lot 28 CATM Qty 54	3	2016	1	2017
Production Deliveries: Production Lot 30 CATM Qty 41	4	2017	4	2018
Production Deliveries: Production Lot 30 AUR Qty 138	2	2018	2	2019
Production Deliveries: Production Lot 31 AUR Qty 163	2	2019	2	2020
Production Deliveries: Production Lot 32 AUR Qty 247	2	2020	2	2021
Production Deliveries: Production Lot 33 AUR Qty 260	2	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0219902M / <i>Global Combat Support Systems - Marine Corps</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	9.128	-	9.128	4.453	2.665	0.000	0.000	0.000	16.246
5503: <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>	0.000	0.000	0.000	9.128	-	9.128	4.453	2.665	0.000	0.000	0.000	16.246

A. Mission Description and Budget Item Justification

GLOBAL COMBAT SUPPORT SYSTEM-MARINE CORPS, (GCSS-MC)/Logistics Chain Management (LCM) is the implementation of the enterprise Information Technology (IT) architecture designed to support both improved and enhanced Marine Air Ground Task Force (MAGTF) Combat Support Services (CSS) functions and MAGTF Commander and Combatant Commanders/Joint Task Force (CC/JTF) combat support information requirements. The primary goal of GCSS-MC/LCM is to provide the capabilities specified in the Logistics Operational Architecture (Log OA). The result of enabling the Log OA is the retirement of logistics applications. GCSS-MC/LCM exposes timely mission information to Marine Corps operational and CSS commanders, CC/JTF commanders and their staffs and other authorized users. It exposes information interoperability and common logistics information applications and services across functional areas. GCSS-MC/LCM is an enabler that allows operating forces commanders to base decisions on complete logistics information and make decisions in concert with specific operational tasks. Other follow-on functionalities can be invoked if affordable and when defined by the problem statements.

Funding in GCSS-MC/LCM RDT&E PE 0206313M/Project 2510 for Tactical - Warehouse Management System transitioned to PE 0219902M/Project 5503 commencing in FY17.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	9.128	-	9.128
Total Adjustments	0.000	0.000	9.128	-	9.128
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	9.300	-	9.300
• Rate/Misc Adjustments	0.000	0.000	-0.172	-	-0.172

Change Summary Explanation

Technical: Not applicable.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0219902M / *Global Combat Support Systems - Marine Corps*

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0219902M / <i>Global Combat Support Systems - Marine Corps</i>				Project (Number/Name) 5503 / <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
5503: <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>	0.000	0.000	0.000	9.128	-	9.128	4.453	2.665	0.000	0.000	0.000	16.246
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GLOBAL COMBAT SUPPORT SYSTEM-MARINE CORPS (GCSS-MC)/Logistics Chain Management (LCM) is the physical implementation of the enterprise Information Technology (IT) architecture designed to support both improved and enhanced Marine Air Ground Task Force (MAGTF) Combat Support Services (CSS) functions and MAGTF Commander and Combatant Commanders/Joint Task Force (CC/JTF) combat support information requirements. The primary goal of GCSS-MC/LCM is to provide the capabilities specified in the Logistics Operational Architecture (LOG OA). The result of enabling the LOG OA is the retirement of logistics applications. The GCSS-MC/LCM exposes timely mission information to Marine Corps operational and CSS commanders, CC/JTF commanders and their staffs and other authorized users. It exposes information interoperability and common logistics information applications and services across functional areas. GCSS-MC/LCM is an enabler that allows operating forces commanders to base decisions on complete logistics information and make decisions in concert with specific operational tasks. Other follow-on capabilities can be invoked if affordable and when defined by the problem statements. Funding in GCSS-MC/LCM RDT&E PE 0206313M/Project 2510 for Tactical - Warehouse Management System transitioned to PE 0219902M/Project 5503 commencing in FY17. The funding increase of \$8.047M from FY16 to FY17 is due to the initiation of Tactical - Warehouse Management System (T-WMS) development.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Global Combat Support Systems - Marine Corps (GCSS-MC)/LCM Tactical - Warehouse Management System (Product Development, Support and Management Services)	0.000	0.000	9.128	0.000	9.128
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: FY2017 GCSS-MC/LCM T-WMS - Initiate the development of T-WMS which supports the implementation of Logistics Operational Architecture (LOG OA) processes for warehouse management at the Supply Management					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0219902M / <i>Global Combat Support Systems - Marine Corps</i>	Project (Number/Name) 5503 / <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Units (SMUs) and the Repairable Issue Point (RIPs) for operational forces. Plans include preparation for a Request for Procurement (RPF) and program baseline. <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	9.128	0.000	9.128

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/4616: <i>Global Combat Support System - Marines</i>	0.000	0.000	1.089	-	1.089	1.985	9.584	9.192	1.215	0.000	23.065

Remarks

D. Acquisition Strategy
PMW 230 strategy for GCSS-MC/LCM is to 'embrace and replace' existing logistics information systems. Using the capabilities provided by GCSS-MC/LCM Increment 1, PMW 230 (PM for GCSS-MC) will embrace existing logistics information systems or replace them as appropriate with modern enabling technology that meets the requirements of the Business Case Analysis(s) (BCAs).

E. Performance Metrics
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0219902M / <i>Global Combat Support Systems - Marine Corps</i>	Project (Number/Name) 5503 / <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GCSS-MC/LCM T-WMS Product Development	TBD	TBD : TBD	0.000	0.000		0.000		8.040	Jan 2017	-		8.040	0.000	8.040	-
Subtotal			0.000	0.000		0.000		8.040		-		8.040	0.000	8.040	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GCSS-MC/LCM T-WMS Development Support	TBD	TBD : TBD	0.000	0.000		0.000		0.838	Jan 2017	-		0.838	0.000	0.838	-
Subtotal			0.000	0.000		0.000		0.838		-		0.838	0.000	0.838	-

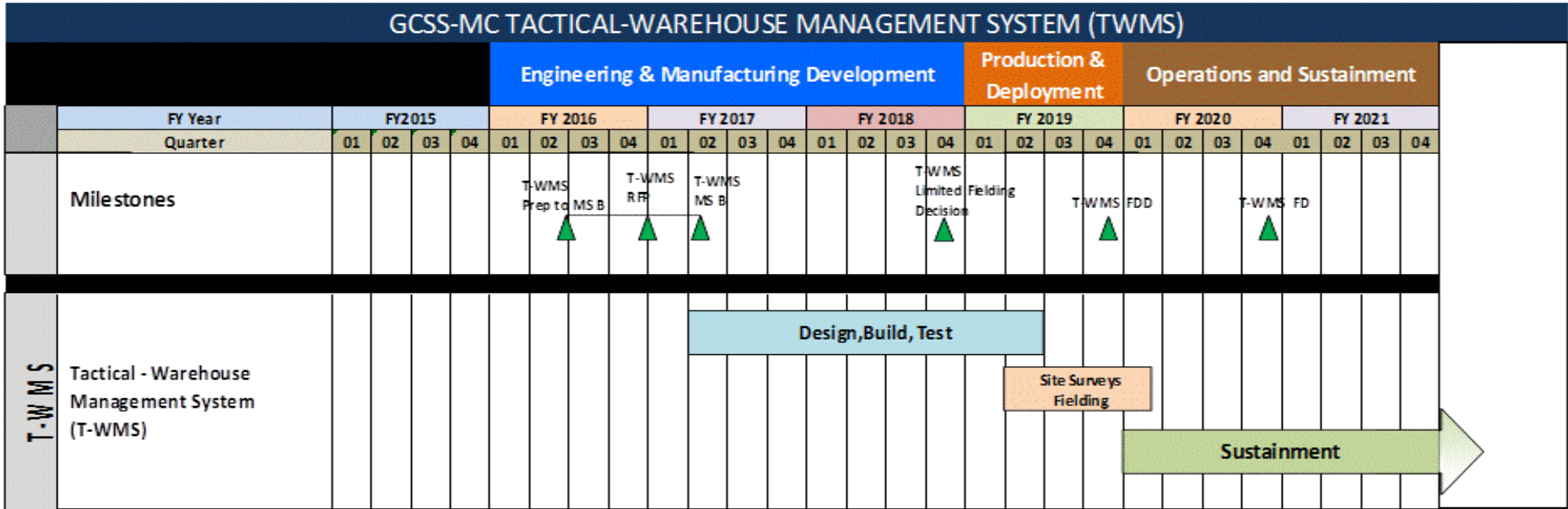
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GCSS-MC Development Oversight	TBD	TBD : TBD	0.000	0.000		0.000		0.250	Jan 2017	-		0.250	0.000	0.250	-
Subtotal			0.000	0.000		0.000		0.250		-		0.250	0.000	0.250	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000	0.000	9.128	-	9.128	0.000	9.128	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0219902M / Global Combat Support Systems - Marine Corps	Project (Number/Name) 5503 / Global Combat Support System - Marine Corps (GCSS-MC)



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0219902M / <i>Global Combat Support Systems - Marine Corps</i>	Project (Number/Name) 5503 / <i>Global Combat Support System - Marine Corps (GCSS-MC)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 5503				
GCSS-MC/LCM T-WMS Milestone B	2	2017	2	2017
GCSS-MC/LCMT-WMS - Limited Fielding Decision	4	2018	4	2018
GCSS-MC/LCMT-WMS - FDD	4	2019	4	2019
GCSS-MC/LCMT-WMS - FD	4	2020	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	4,645.411	34.717	47.312	37.372	-	37.372	47.478	48.911	43.786	23.505	Continuing	Continuing
0728: <i>EHF SATCOM Terminals</i>	651.521	18.228	28.044	21.116	-	21.116	32.104	34.812	30.826	10.301	Continuing	Continuing
0731: <i>FLTSATCOM</i>	34.080	4.735	3.101	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.916
2472: <i>Mobile User Objective Sys (MUOS)</i>	3,959.810	11.754	16.167	13.867	-	13.867	13.885	13.193	12.960	13.204	221.435	4,276.275
3398: <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>	0.000	0.000	0.000	2.389	-	2.389	1.489	0.906	0.000	0.000	0.000	4.784

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 290, 345

A. Mission Description and Budget Item Justification

The Navy Multiband Terminal (NMT) Program is the required Navy component to the Advanced Extremely High Frequency (AEHF) program for enhancing protected and survivable satellite communications to Naval forces. The NMT system provides an increase in single service capability from 1.5 Megabits per second (Mbps) to 8 Mbps, increases the number of coverage areas and retains Anti-Jam/Low Probability of Intercept (AJ/LPI) protection characteristics. It is compatible with today's Navy Low Data Rate/Medium Data Rate (LDR/MDR) terminals and will sustain the Military Satellite Communications (MILSATCOM) architecture by providing connectivity across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence in support of A2AD initiatives. The NMT system will replenish and improve on Navy terminal capabilities of the Military Strategic, Tactical & Relay System (MILSTAR), Defense Satellite Communications System (DSCS), Wideband Global Satellite (WGS) and Global Broadcast Service (GBS). The new system will equip the warfighters with the assured, jam resistant, secure communications as described in the joint AEHF satellite communications system and WGS Operational Requirements Documents (ORD). The NMT will provide multiband Satellite Communications (SATCOM) capability for ship, submarine, and protected MILSATCOM for shore sites.

The Joint Ultra-High Frequency (UHF) Military Satellite Communications (MILSATCOM) Network Integrated Control System (JMINI CS) is a legacy system that commenced in 1998. JMINI CS is a Navy-led, Joint-interest program providing integrated, dynamic, and centralized control of non-processed UHF MILSATCOM 5/25 kHz Demand Assigned Multiple Access (DAMA) and Demand Assigned Single Access (DASA) channels to maximize existing highly sought after SATCOM resources. The system also provides decentralized web-based management of those resources for use as a situational awareness tool for Combatant Commanders, Global SATCOM Support Centers, and Regional SATCOM Support Centers. The system is expected to operate well beyond the original 2015 End of Life (EoL) date to 2033. The JMINI CS Program will perform concept development and exploration to identify cost-effective solutions to address multiple life cycle support issues, in order to minimize loss of service to the fleet. The effort will involve evaluation, development, laboratory and integration testing of Commercial Off-The-Shelf (COTS) and Government off-the-shelf (GOTS) hardware and software to replace obsolete components or subsystems while maintaining interoperability with existing systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>
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The Mobile User Objective System (MUOS) program provides for the development of the next generation Department of Defense (DoD) advanced narrowband communications satellite constellation. The current Ultra-High Frequency (UHF) Follow-On (UFO) constellation is projected to degrade below acceptable availability parameters in 2015. This MUOS Research Development Test & Evaluation, Navy (RDT&E,N) effort supports Full Operational Capability (FOC) in FY 2017.

The Navy Global Broadcast Service (GBS) Program is the Navy component of the Joint Military Satellite Communications(MILSATCOM) ACAT IC program that delivers the continuous flow of high-speed, high-volume communication and information flow for deploying, deployed, on the move, and garrisoned forces. The Joint GBS system supports the Navy Strategic Plan and equips warfighters with counter Anti-Access/Area Denial (A2AD) communications in a denied Command, Control, Communications, Computers, and Intelligence (C4I) environment. The Enterprise SATCOM Gateway Modem (ESGM) is the DoD Chief Information Officer directed solution to satisfy the Transmission Security (TRANSEC) requirement in place of the Joint Internet. Testing and fielding of the ESGM is a joint venture, operationally directed by the Defense Information Systems Agency (DISA) and the Air Force as the lead service. GBS augments and interfaces with other communications systems, provides relief to overburdened communications systems already in place, and provides information to previously unsupported users. GBS provides bandwidth five times any other system, up to 45 Mbps of forward link data (shore to ship) per WGS satellite transponder.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	41.729	53.239	45.403	-	45.403
Current President's Budget	34.717	47.312	37.372	-	37.372
Total Adjustments	-7.012	-5.927	-8.031	-	-8.031
• Congressional General Reductions	-	-0.127			
• Congressional Directed Reductions	-	-5.800			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.801	0.000			
• SBIR/STTR Transfer	-1.211	0.000			
• Program Adjustments	0.000	0.000	-10.500	-	-10.500
• Rate/Misc Adjustments	0.000	0.000	2.469	-	2.469

Change Summary Explanation

Decrease in Satellite Communications (Space) by \$0.93M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Schedule:

EHF SATCOM Terminals (project 0728) - No significant technical changes.

Enterprise SATCOM Gateway Modems (ESGMs Project 3398) - Incorporates Enterprise SATCOM Gateway Modem (ESGM) Implementation for the Global Broadcast Service Program (FY2017-FY2019).

Funding:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	PE 0303109N / <i>Satellite Communications (Space)</i>

0728: FY2016 \$5.8M funding decrease to NMT requirements for support of range and elevation to JALN-M AEHF Airborne XDR waveform communications development.
0728: FY2017 funding request was reduced by \$10.5M for Wideband Anti-Jam (AJ) Modem Re-phase.
2472: FY2017 funding decreased by \$2.7M for Engineering Contract. Will be restored in FY18/FY19.
3398: FY2017 funding increased by \$2.4M for ESGM Implementation for the Global Broadcast Service Program.

Technical:
Enterprise SATCOM Gateway Modems (ESGMs) (project 3398) - Incorporates Enterprise SATCOM Gateway Modem (ESGM) Implementation for the Global Broadcast Service Program (FY2017-FY2019).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>				Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0728: <i>EHF SATCOM Terminals</i>	651.521	18.228	28.044	21.116	-	21.116	32.104	34.812	30.826	10.301	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 290												

A. Mission Description and Budget Item Justification

The Navy Multiband Terminal (NMT) Program is the required Navy component to the Advanced Extremely High Frequency (AEHF) Program for enhancing protected and survivable satellite communications to Naval forces. The NMT system provides an increase in single service capability from 1.5 Megabits per second (Mbps) to 8 Mbps, increases the number of coverage areas, and retains Anti-Jam/Low Probability of Intercept (AJ/LPI) protection characteristics. It is compatible with today's Navy Low Data Rate/Medium Data Rate (LDR/MDR) terminals and will sustain the Military Satellite Communications (MILSATCOM) architecture by providing connectivity across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence. The NMT system will replenish and improve on Navy Military Strategic, Tactical & Relay System (MILSTAR), Defense Satellite Communications System (DSCS), Wideband Global Satellite (WGS), and Global Broadcast Service (GBS) terminal capabilities. The new system will equip the warfighters with assured, jam resistant, secure communications as described in both the joint AEHF Satellite Communications System and the WGS Operational Requirement Documents (ORD). Mission requirements specific to Navy operations, including threat levels and scenarios, are contained in the ORD. The NMT will provide multiband Satellite Communications (SATCOM) capability for ship, submarine, and protected MILSATCOM for shore sites.

Wideband Anti-Jam Modem Systems (WAMS) enhances communication capability of shipboard and submarine NMTs by providing wideband Anti-Jam (AJ) Satellite Communication throughput over Wideband Global SATCOM (WGS). WAMS enables space segment AJ diversity (EHF/AEHF and WGS), thus enabling NMT ships and submarines equipped with the modem to operate in wideband links closer to threat jammers. WAMS enables the use of WGS X and Ka-band resources to assure access to mission critical communications in the A2AD environment. The use of WAM Protected Tactical Waveform (PTW) on WGS will augment AEHF extended data rate (XDR) services to provide the information throughput capacity necessary to support critical Command and Control capability.

Joint Aerial Layer Network-Maritime (JALN-M) is the Navy implementation of the JALN architecture which provides assured communications in any environment, especially in an Anti-Access Area Denial (A2AD) satellite denied environment. With disruption or loss of Space tier communications, JALN-M establishes and/or restores connectivity within the High Capacity Backbone (HCB) Common Data Link (CDL) tier, the Distribution Access Range Extension (DARE) tier, and the Transition tier in accordance with the JALN-M Initial Capabilities Document and the JALN Analysis of Alternatives (AoA) Final Report. JALN-M is a robust, assured communications capability providing joint connectivity via the HCB and Navy platform connectivity via a pseudo satellite DARE capability. JALN-M will use the Extended Data Rate (XDR) NMT waveform for intra-battle group DARE communications, a Common Data Link (CDL) waveform for the HCB cross-link capability, and intend to develop a pre-planned product improvement to leverage enhanced Ultra High Frequency/High Frequency (UHF/HF) waveforms for coalition connectivity. A critical component of A2AD is Adaptive Coding software development incorporation into the baseline NMT terminal in addition to supporting the JALN-M demonstration. This capability autonomously enhances maximum throughput and supports degraded conditions by adjusting End-to-End code rate to provide continuous, mission critical, and protected communications.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>
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Technology Insertion, studies and implementation is necessary for military satellite communications systems development to support emerging technologies for Commercial Broadband Satellite Program (CBSP) and Global Broadcast Service (GBS) Terminals. Efforts will include evaluation of End-to-End performance testing of data rates associated with Broadband and Broadcast transmissions.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: NMT Development	7.238	16.844	7.682	0.000	7.682
Articles:	-	-	-	-	-
<p>Description: Overall program efforts include investigation of emerging technologies through study, development, and associated testing for feasibility of satellite communications-related program insertion.</p> <p>FY 2015 Accomplishments: Completed demonstration of communications planning with the Tactical Mission Planning Sub-System (T-MPSS). Continued on-going efforts to test the Enhanced Polar System (EPS) functionality within the NMT system. Began Anti-Access Area Denial (A2AD) development for Advanced Time Division Multiple Access (TDMA) Interface Processor (ATIP) Adaptive Coding (AC) initiatives, AC terminal design development and crypto interface studies. Performed technical and system risk reduction, and solution analysis for Airborne Extended Data Rate (XDR) and implemented the A2AD mitigation strategy for NMT.</p> <p>FY 2016 Plans: Complete Follow-on Operational Test and Evaluation (FOT&E) of the NMT system for testing with the on-orbit Airborne XDR waveform. Continue on-going efforts to test the Enhanced Polar System (EPS) functionality with the NMT system. Continue A2AD development to include the ATIP and AC initiatives. Continue AC terminal design. Initiate development and complete Wideband Anti Jam Modem (WAM) specification and risk reduction crypto interface efforts. Complete NMT design for the Airborne XDR JALN-M demonstration. Plan for and complete the ATIP and NMT SATCOM AC Design Verification Tests executed to illustrate specification compliance. Begin development of all Fleet logistics support products in support of initial fielding of the SATCOM AC capability. Analyze network architectures and satellite resource utilization in support of SATCOM AC to ensure realistic fleet implementation.</p> <p>FY 2017 Base Plans: Continue development of the WAM technical baseline for use in NMT. Develop design of the Modem Mission Management System (MMS) and Key Management System (KMS). Research and pursue integration strategies for MMS/KMS operational compatibility with DoD enterprise Protected Tactical Enterprise Service (PTES)</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
ground solution architecture. Plan for and complete the NMT SATCOM AC Design Verification Test executed to illustrate specification compliance. Initiate design development for Adaptive Coding Time of Day (TOD) encryption to enable a more robust, lower code rate when the link margin is degraded and begin Software modifications on the NMT, ATIP, and KIV-7M to implement the capability. Perform technical and system risk reduction and implement the A2AD mitigation strategy for NMT. FY 2017 OCO Plans: N/A					
Title: Joint Aerial Layer Network Maritime (JALN-M) FY 2015 Accomplishments: Began system of systems development, integration, and testing, to include development of capabilities for shipboard and submarine NMT systems to support Advanced Extremely High Frequency (AEHF) Airborne Extended Data Rate(XDR) waveform communications with the JALN-M Pod Airborne XDR payload. Developed design specification of JALN-M payload requirements for integration into an airborne prototype Pod. Began Anti-Access Area Denial (A2AD) development for JALN. Included Advanced Time Division Multiple Access (TDMA) Interface Processor (ATIP) initiatives, Adaptive Coding terminal design and design modifications to the NMT for Airborne XDR waveform implementation and the ability to acquire and track an airborne payload to implement the A2AD mitigation strategy for JALN-M. FY 2016 Plans: Continue system of systems development, integration, and testing, to include development of capabilities for shipboard and submarine NMT systems to support AEHF Airborne XDR waveform communications with the JALN-M Pod Airborne XDR payload and High Capacity Backbone. Develop detailed test plans for validating the JALN-M Airborne XDR payload. FY 2017 Base Plans: Continue system of systems development, integration, and testing. Includes completion of design verification of JALN-M capabilities of NMT by testing with the Airborne XDR payload. Perform ATIP, Adaptive Coding and Automated Digital Network System (ADNS) integration testing. Complete the design verification of JALN-M capabilities of NMT by testing with the Airborne XDR payload and the Position Reporting System / Topology Manager (PRS/TM) Plan. Create all data needed to obtain approval for Interim Authority To Test (IATT) associated with NMT and ATIP for the JALN-M demonstration. Install the JALN-M capabilities and execute site	10.990	11.200	13.284	0.000	13.284
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
verification by using the AEHF satellite for End-to-End SATCOM Adaptive Coding. Create detailed test plans and scenario data for the JALN-M FY18 Demonstration. FY 2017 OCO Plans: N/A					
Title: Technology Insertion Description: Overall program efforts include technology insertion implementation and associated testing required to support satellite communications. FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans: Perform DT and OT of Commercial Broadband Satellite Program (CBSP) Force Level Variant (FLV) Capacity Key Performance Parameter (KPP) to evaluate End-to-End performance of data rates throughout the shipboard network. FY 2017 OCO Plans: N/A	0.000 -	0.000 -	0.150 -	0.000 -	0.150 -
Articles:					
Accomplishments/Planned Programs Subtotals	18.228	28.044	21.116	0.000	21.116

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/3216: Navy Multiband Terminal (NMT)	233.162	118.113	38.365	-	38.365	68.054	95.021	71.425	11.102	103.000	1,358.435
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>

D. Acquisition Strategy

The NMT Follow-On Full Deployment (FOFD) contract will continue NMT production for Afloat platforms and Shore locations, in support of the Chief of Naval Operations and the Department of the Navy (DON), and will allow the NMT Program to complete Full Operational Capability (FOC). The competitive contract awarded to COMTECH supports the development of Anti-Access Area Denial (A2AD).

E. Performance Metrics

The RDT&E goal for the NMT program is to create a military satellite communications system that consolidates capabilities of current and future satellite systems into a single terminal. SATCOM-related technology insertion, studies and associated testing will support the GBS and CBSP Programs.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	Various	Various : Various	431.733	0.000		0.000		0.000		-		0.000	0.000	431.733	-
Software Development	C/CPAF	Raytheon : Marlborough, MA	64.516	6.909	Jan 2015	14.054	Jan 2016	6.576	Jan 2017	-		6.576	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC PAC : San Diego, CA	22.088	0.000		0.000		1.748	Nov 2016	-		1.748	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Newport, RI	31.437	2.685	Nov 2014	3.000	Jan 2016	2.000	Jan 2017	-		2.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPAF	Systech : San Diego, CA	5.438	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	MIT/LL : Marlborough, MA	0.000	0.000	Oct 2014	0.400	Jun 2016	1.656	Jan 2017	-		1.656	Continuing	Continuing	Continuing
Software Development	C/CPFF	COMTECH : Tempe, AZ	20.147	4.450	Dec 2014	2.108	Dec 2015	2.000	Dec 2016	-		2.000	Continuing	Continuing	Continuing
Subtotal			575.359	14.044		19.562		13.980		-		13.980	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support	Various	Various : Various	25.722	0.000		0.000		0.000		-		0.000	0.000	25.722	-
Government Oversight	WR	NUWC : Newport, RI	0.000	0.272	Nov 2014	2.008	Nov 2015	2.512	Nov 2016	-		2.512	Continuing	Continuing	Continuing
Support	C/CPAF	Systech : San Diego, CA	0.000	1.365	Nov 2014	1.194	Nov 2015	1.160	Nov 2016	-		1.160	Continuing	Continuing	Continuing
Support	WR	SSC PAC : San Diego, CA	0.000	0.000		1.266	Jan 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			25.722	1.637		4.468		3.672		-		3.672	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	21.280	0.917	Nov 2014	2.000	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
Operational Test & Evaluation 1	WR	COMOPTEVFOR : Norfolk, VA	5.566	0.303	Nov 2014	0.100	Nov 2015	0.000	Nov 2016	-		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPAF	Raytheon : Marlborough, MA	3.128	0.819	Nov 2014	0.000		0.000		-		0.000	0.000	3.947	-
Subtotal			29.974	2.039		2.100		2.000		-		2.000	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contract Management	C/CPFF	BAH : San Diego	8.991	0.234	Nov 2014	0.220	Nov 2015	0.178	Nov 2016	-		0.178	Continuing	Continuing	Continuing
Program Management	C/CPFF	BAH : San Diego	9.011	0.234	Nov 2014	1.654	Nov 2015	1.246	Nov 2016	-		1.246	Continuing	Continuing	Continuing
Acquisition Management	WR	NCCA : Various	0.653	0.000		0.000		0.000		-		0.000	0.000	0.653	-
Travel	Reqn	SPAWAR : Various	1.811	0.040	Nov 2014	0.040	Nov 2015	0.040	Nov 2016	-		0.040	Continuing	Continuing	Continuing
Subtotal			20.466	0.508		1.914		1.464		-		1.464	-	-	-

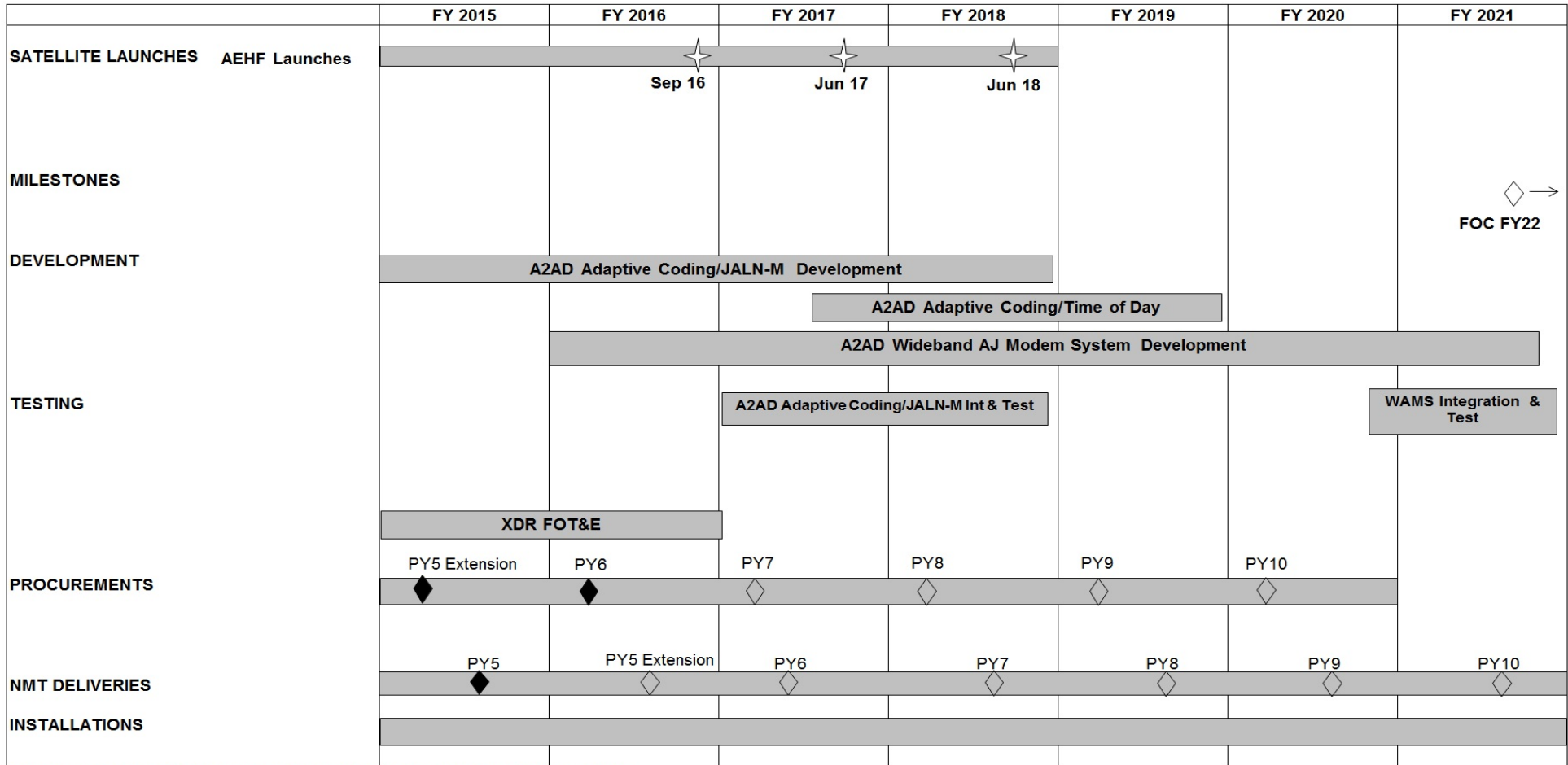
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		651.521	18.228	28.044	21.116	-	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>
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Note: Procurement and Delivery nomenclature updated to align to NMT production contract

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0728				
Procurement Year 5 Extension (PY5 E)	2	2015	2	2015
FRP PY5 Delivery	3	2015	3	2015
Procurement Year 6 (PY6)	1	2016	1	2016
FRP PY5 Extension Delivery	3	2016	3	2016
AEHF Launch SV-4	4	2016	4	2016
FRP PY6 Delivery	2	2017	2	2017
AEHF Launch SV-5	3	2017	3	2017
A2AD Adaptive Coding & JALN-M Development	1	2015	4	2018
A2AD Adaptive Coding & JALN-M Integration & Testing	1	2017	4	2018
A2AD Wideband AJ Modem Development	1	2016	4	2021
Procurement Year 7 (PY7)	2	2017	2	2017
Procurement Year 8 (PY8)	2	2018	2	2018
Procurement Year 9 (PY9)	2	2019	2	2019
Procurement Year 10 (PY10)	2	2020	2	2020
FRP PY7 Delivery	3	2018	3	2018
FRP PY8 Delivery	3	2019	3	2019
FRP PY9 Delivery	3	2020	3	2020
WAM Integration & Testing	4	2020	4	2021
FRP PY10 Delivery	3	2021	3	2021
XDR FOT&E	1	2015	4	2016
AEHF Launch SV-6	3	2018	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0728 / <i>EHF SATCOM Terminals</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
A2AD Adaptive Coding/Time of Day	3	2017	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0731 / <i>FLTSATCOM</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0731: <i>FLTSATCOM</i>	34.080	4.735	3.101	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.916
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Ultra-High Frequency (UHF) Military Satellite Communications (MILSATCOM) Network Integrated Control System (JMINI CS) is a legacy system that commenced development in 1998. JMINI CS is a Navy-led, Joint interest program providing integrated, dynamic, and centralized control of non-processed UHF MILSATCOM 5/25 kHz Demand Assigned Multiple Access (DAMA) and Demand Assigned Single Access (DASA) channels to maximize existing highly sought after SATCOM resources used to support operational missions as well as joint training and tactical exercises. The system provides decentralized web-based management of those resources for use as a situational awareness tool for Combatant Commanders and SATCOM Support Centers. The JMINI CS is required to operate beyond the original End of Life (EoL) of 2015 in order to continue to support mission critical operations through at least 2033. The JMINI CS Program of Record (POR) will perform concept development and exploration to identify cost-effective solutions to address multiple life cycle support issues in order to address the increasing risk of an unrecoverable hardware or software failure, which would result in a loss of service for the fleet. The effort will involve evaluation, prototype development, laboratory and integration testing of Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) hardware and software to replace obsolete components or subsystems while maintaining interoperability with existing platforms/systems.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: JMINI CS	4.735	3.101	0.000	0.000	0.000
Articles:	1	-	-	-	-
FY 2015 Accomplishments: Finalized prototype design, developed test plans and began implementation of a comprehensive test strategy. Continued software development and integration of the system architecture.					
FY 2016 Plans: Completion of documentation and testing of software and hardware required for fielding decisions.					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	4.735	3.101	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0731 / <i>FLTSATCOM</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• OPN/3215: <i>JMINI</i>	6.548	4.491	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.772

Remarks

D. Acquisition Strategy

JMINI CS: The Joint Ultra-High Frequency (UHF) Military Satellite Communications (MILSATCOM) is an ACAT IV (T) system that is post-FRP. As a legacy system that commenced in 1998, JMINI CS is expected to operate well beyond the original 2015 End of Life (EoL) date. The projected EoL for JMINI CS extends past 2033. The JMINI CS Program of Record (POR) will evaluate the most cost-effective solutions to address multiple life cycle support issues, in order to minimize loss of service to the fleet. The effort will involve evaluating Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) hardware and software, and conducting laboratory/integration testing to ensure proper functionality and interoperability.

E. Performance Metrics

JMINI CS: The JMINI CS POR will perform concept development and exploration of the JMINI CS 5 kHz and 25 kHz systems, to analyze alternatives for the most advantageous use of new technologies to extend the JMINI CS system life span in order to minimize loss of service to the Fleet.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0731 / <i>FLTSATCOM</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JMINI Contractor Engineering Support	C/CPFF	SSC PAC : San Diego, CA.	17.160	0.000		0.000		0.000		-		0.000	0.000	17.160	-
JMINI Government Engineering	WR	SSC PAC : San Diego, CA.	12.654	3.075	Nov 2014	1.106	Nov 2015	0.000		-		0.000	0.000	16.835	-
JMINI Certification Authority	WR	SSC LANT : Charleston, SC	0.698	0.680	Jan 2015	0.000		0.000		-		0.000	0.000	1.378	-
Subtotal			30.512	3.755		1.106		0.000		-		0.000	0.000	35.373	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IPv6 Support	WR	SSC PAC : San Diego	2.418	0.000		0.000		0.000		-		0.000	0.000	2.418	-
JMINI Obsolescence Forecast & Analysis	WR	NSWC : Corona	0.000	0.050	Nov 2014	0.000		0.000		-		0.000	0.000	0.050	-
Subtotal			2.418	0.050		0.000		0.000		-		0.000	0.000	2.468	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JMINI Interoperability Test	WR	JITC : Ft. Huachaca	0.200	0.222	Nov 2014	0.185	Dec 2015	0.000		-		0.000	0.000	0.607	-
JMINI Test & Evaluation	WR	COTF : Norfolk, VA	0.000	0.320	Nov 2014	0.000		0.000		-		0.000	0.000	0.320	-
MIBS Development Test & Evaluation	WR	SSC PAC : San Diego, CA.	0.408	0.000		0.000		0.000		-		0.000	0.000	0.408	-
JMINI Test & Evaluation	WR	SSC PAC : San Diego, CA	0.000	0.000		1.500	Nov 2015	0.000		-		0.000	0.000	1.500	-
Subtotal			0.608	0.542		1.685		0.000		-		0.000	0.000	2.835	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 0731 / <i>FLTSATCOM</i>
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Proj 0731	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	Development & Integration																											
	Development & Integration																											
	EDR II ▲				Testing																							
	Production								Install																			

2016DON - 0303109N - 0731

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 0731 / <i>FLTSATCOM</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0731				
Software development, test, and integration	1	2015	3	2015
Prototype development and testing	1	2015	3	2015
Engineering Design Review I (EDRI)	3	2015	3	2015
Engineering Design Review II (EDRII)	2	2015	2	2015
System Testing	4	2015	4	2016
Production Contract Award	4	2015	4	2015
Production	1	2015	2	2016
Install	3	2016	1	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>				Project (Number/Name) 2472 / <i>Mobile User Objective Sys (MUOS)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2472: <i>Mobile User Objective Sys (MUOS)</i>	3,959.810	11.754	16.167	13.867	-	13.867	13.885	13.193	12.960	13.204	221.435	4,276.275
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 345

A. Mission Description and Budget Item Justification

The Mobile User Objective System (MUOS) program provides for the development of the next generation Department of Defense (DoD) advanced narrowband communications satellite constellation. The current Ultra-High Frequency (UHF) Follow-On (UFO) constellation is projected to degrade below acceptable availability parameters in 2015.

This MUOS Research Development Test & Evaluation, Navy (RDT&E,N) effort supports Full Operational Capability (FOC) in FY 2017.

FY17: Conduct engineering activities and acceptance testing to address Information Assurance (IA) and emergent system requirements/enhancements in relation to operational environment.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Mobile User Objective Sys (MUOS)	11.754	16.167	13.867	0.000	13.867
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Conducted follow-on Information Assurance Control & Validation (IACVs) at each ground station to obtain Interim Authority To Operate (IATO) extensions. Continue Information Assurance (IA) vulnerability fixes identified during the IACVs at all sites. Continue research for emerging IA issues, maintain security accreditations, regression test (acceptance test) and implement mandated security changes to ensure system readiness/availability. Initiated terminal integration and testing of MUOS capable terminal hardware/software devices to ensure interoperability with the MUOS ground systems. Conducted developmental and test readiness events in preparation for program level TECHEVAL. Conducted Assessment of Operational Test Readiness 2 (AOTR 2) and Operational Test Readiness Review 2 (OTRR 2). Initiated engineering capability assessments in preparation for FY16 Multiservice Operational Test and Evaluation 2 (MOT&E 2).					
FY 2016 Plans: Continue terminal integration and testing of MUOS capable terminal hardware/software devices to ensure interoperability with the MUOS ground system. Complete engineering capability assessments in preparation					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 2472 / <i>Mobile User Objective Sys (MUOS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
for FY16 MOT&E. Conduct the Multiservice Operational Test and Evaluation 2 (MOT&E 2). Complete IA vulnerability fixes identified during the IACVs at all sites and regression test (acceptance test) of IA issues. Conduct engineering and acceptance test activities to address IA and emergent system requirements/enhancements in relation to operational environment. FY 2017 Base Plans: Continue terminal integration and testing of MUOS capable terminal hardware/software devices to ensure interoperability with the MUOS ground system. Continue engineering activities and acceptance testing to address IA and emergent system requirements/enhancements in relation to operational environment. Achieve Full Operational Capability (FOC). FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	11.754	16.167	13.867	0.000	13.867

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• WPN/2433: <i>Mobile User Objective System (MUOS)</i>	206.700	34.232	36.723	-	36.723	46.119	41.913	40.336	37.470	796.087	3,063.945

Remarks

D. Acquisition Strategy

Research Development Test & Evaluation, Navy (RDT&E,N) funds in FY17 and out planned for engineering activities and acceptance testing to address Information Assurance (IA) and emergent system requirements/enhancements in relation to operational environment.

E. Performance Metrics

FY17: Conduct IA vulnerability and ground system tests and implement fixes/complete updates to ensure system readiness/availability in the operational environment. Achieve Full Operational Capability (FOC) in FY 2017.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications</i> (Space)	Project (Number/Name) 2472 / <i>Mobile User Objective Sys (MUOS)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RRDD AOS Contract	C/CPAF	Lockheed Martin (LM) : Sunnyvale, CA	3,528.952	9.095	Feb 2015	13.024	Mar 2016	0.000		-		0.000	0.000	3,551.071	-
Engineering Contract	C/CPAF	TBD : TBD	0.000	0.000		0.000		12.110	Dec 2016	-		12.110	252.429	264.539	-
Product Development PY	Various	Various : Various	133.670	0.000		0.000		0.000		-		0.000	0.000	133.670	-
Subtotal			3,662.622	9.095		13.024		12.110		-		12.110	252.429	3,949.280	-

Remarks
In accordance with Program Office's Acquisition Strategy, engineering services will be continued and negotiated on a new contract vehicle to be awarded in FY17.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support PY	Various	Various : Various	38.378	0.000		0.000		0.000		-		0.000	0.000	38.378	-
Subtotal			38.378	0.000		0.000		0.000		-		0.000	0.000	38.378	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	22.718	0.460	Oct 2014	0.000		0.000		-		0.000	0.000	23.178	-
Operational Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	5.029	1.067	Dec 2014	1.995	Dec 2015	0.000		-		0.000	0.000	8.091	-
Subtotal			27.747	1.527		1.995		0.000		-		0.000	0.000	31.269	-

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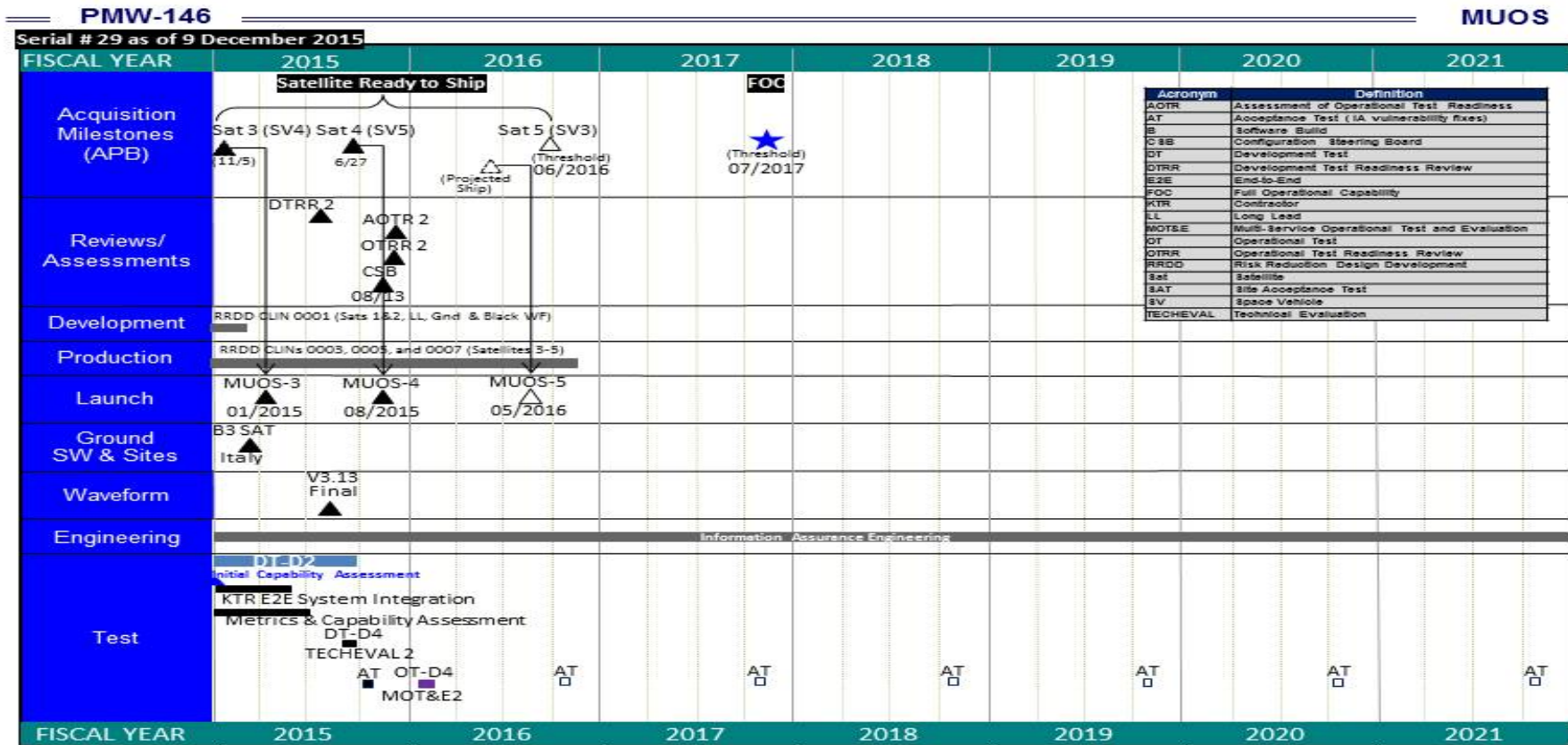
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0303109N / Satellite Communications
(Space)

Project (Number/Name)
2472 / Mobile User Objective Sys (MUOS)



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 2472 / <i>Mobile User Objective Sys (MUOS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2472				
Initial Capability Assessment	1	2015	1	2015
Italy Build 3.1	1	2015	1	2015
Ready to Ship date #3	1	2015	1	2015
KTR E2E System Integration	1	2015	2	2015
Metrics & Capability Assessment	1	2015	3	2015
Information Assurance Engineering	1	2015	4	2021
Launch of Satellite #3 (MUOS 3)	2	2015	2	2015
Development Test Readiness Review (DTRR) 2	3	2015	3	2015
Waveform Version 3.1.3 (Final) Release Delivery to Information Repository	3	2015	3	2015
DT-D4 Tech Eval 2	3	2015	3	2015
Ready to Ship date #4	3	2015	3	2015
Configuration Steering Board (FY15)	4	2015	4	2015
Acceptance Test FY15 (AT)	4	2015	4	2015
Launch of Satellite #4 (MUOS 4)	4	2015	4	2015
Operational Test Readiness Review (OTRR) 2	4	2015	4	2015
Assessment of Operational Test Readiness (AOTR) 2	4	2015	4	2015
OT-D4 Multi-Service Operational Testing & Evaluation (MOT&E 2) Report	1	2016	1	2016
Ready to Ship date #5	2	2016	2	2016
Launch of Satellite #5 (MUOS 5)	3	2016	3	2016
Acceptance Test FY16 (AT)	4	2016	4	2016
Full Operational Capability (FOC)	4	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 2472 / <i>Mobile User Objective Sys (MUOS)</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acceptance Test FY17 (AT)	4	2017	4	2017
Acceptance Test FY18 (AT)	4	2018	4	2018
Acceptance Test FY19 (AT)	4	2019	4	2019
Acceptance Test FY20 (AT)	4	2020	4	2020
Acceptance Test FY21 (AT)	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>				Project (Number/Name) 3398 / <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3398: <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>	0.000	0.000	0.000	2.389	-	2.389	1.489	0.906	0.000	0.000	0.000	4.784
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy Global Broadcast Service (GBS) Program is the Navy component of the Joint Military Satellite Communications(MILSATCOM) program that delivers the continuous flow of high-speed, high-volume communication and information flow for deploying, deployed, on the move, and garrisoned forces. The GBS system supports the Navy Strategic Plan and equips warfighters with counter Anti-Access/Area Denial (A2AD) communications in a denied Command, Control, Communications, Computers, and Intelligence (C4I) environment. GBS provides Satellite Communications (SATCOM) capability for forces afloat, ashore, and Naval Special Warfare Command.

The Enterprise SATCOM Gateway Modem (ESGM) is the DoD Chief Information Officer directed solution to satisfy the Transmission Security (TRANSEC) requirement in place of the Joint Internet Protocol Modem (JIPM) acquisition strategy. Testing and fielding of the ESGM is a joint venture, operationally directed by the Defense Information Systems Agency (DISA) and the Air Force as the lead service. Additionally, the ESGM will continue to enable GBS reception of the Digital Video Broadcast - Satellite 2nd Generation (DVB-S2).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: GBS Enterprise Satellite Communications Gateway Modems	0.000	0.000	2.389	0.000	2.389
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Begin integration and testing necessary to support the Enterprise Satellite Communications Gateway Modems (ESGM) technical baseline for use in Global Broadcast Service(GBS) in the joint operational environment to support Joint TRANSEC requirement on the Radio Frequency (RF) segment. GBS Joint ESGM Developmental Test (DT) and Operational Test (OT) activities for ESGM integration with the system will be scheduled during					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 3398 / <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>this timeframe. Plan for and complete the ESGM design and application integration verification tests to illustrate specification compliance with Navy C4I systems.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	2.389	0.000	2.389

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
The GBS program reached a Full Rate Production Decision on 24 Oct 2008 and is in sustainment. The Navy program is approaching Full Operational Capability (FOC). The Enterprise Satellite Communications (SATCOM) Gateway Modem (ESGM), the Commercial Off-The-Shelf (COTS) Internet Protocol (IP) modem, provides Transmission Security functionality in support of DoD CIO direction to implement Information Assurance for all transmission media.

E. Performance Metrics
The RDT&E goal for the GBS program is to create a military satellite communications system that supports current and future requirements for Anti-Access/Area Denial and Information Assurance.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 7				PE 0303109N / Satellite Communications (Space)				3398 / Enterprise SATCOM Gateway Modems (ESGMs)							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.499	Nov 2016	-		0.499	0.000	0.499	-
Systems Engineering	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.280	Nov 2016	-		0.280	0.000	0.280	-
Systems Engineering	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.785	Nov 2016	-		0.785	0.000	0.785	-
Subtotal			0.000	0.000		0.000		1.564		-		1.564	0.000	1.564	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/BA	SYSTECH : San Diego, CA	0.000	0.000		0.000		0.200	Nov 2016	-		0.200	0.000	0.200	-
Operational Test & Evaluation	C/BA	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.370	Nov 2016	-		0.370	0.000	0.370	-
Subtotal			0.000	0.000		0.000		0.570		-		0.570	0.000	0.570	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	C/CPFF	BAH : San Diego	0.000	0.000		0.000		0.240	Nov 2016	-		0.240	0.000	0.240	-
Travel	Reqn	SPAWAR : Various	0.000	0.000		0.000		0.015	Nov 2016	-		0.015	0.000	0.015	-
Subtotal			0.000	0.000		0.000		0.255		-		0.255	0.000	0.255	-
Project Cost Totals			0.000	0.000		0.000		2.389		-		2.389	0.000	2.389	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 3398 / <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>

	2015	2016	2017	2018	2019	2020	2021
DEVELOPMENT			ESGM Development & Integration				
TESTING			GBS ESGM DT/OT				
PROCUREMENTS							
ESGM			◆ ◆				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303109N / <i>Satellite Communications (Space)</i>	Project (Number/Name) 3398 / <i>Enterprise SATCOM Gateway Modems (ESGMs)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3398				
ESGM Development and Integration	1	2017	2	2019
GBS ESGM DT/OT	2	2017	1	2018
ESGM Procurement 1	2	2017	2	2017
ESGM Procurement 2	2	2018	2	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	139.401	24.137	21.667	23.541	-	23.541	23.922	22.143	22.803	23.286	339.460	640.360
0725: <i>Communication Automation</i>	2.332	3.089	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.421
9C87: <i>CANES Integration</i>	137.069	21.048	21.667	23.541	-	23.541	23.922	22.143	22.803	23.286	339.460	634.939

Note
Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks & Enterprise Services (CANES) is the Navy's only Program of Record (POR) to replace existing afloat networks and provide the necessary infrastructure for applications, systems, and services required for the Navy to dominate the Cyber Warfare domain. CANES is the technical and infrastructure consolidation of existing, separately managed afloat networks including Integrated Shipboard Network Systems (ISNS), Combined Enterprise Regional Information Exchange System - Maritime (CENTRIXS-M), Sensitive Compartmented Information (SCI) Networks, and Submarine Local Area Network (SubLAN). These legacy afloat network designs are currently End of Life and CANES will replace these unaffordable and obsolete networks.

The fundamental goal of CANES is to bring Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), within which current and future iterations of Navy Tactical Network computing and storage capabilities will reside. CANES will provide complete infrastructure inclusive of hardware, software, processing, storage, and end user devices for Unclassified, Coalition, Secret and SCI for all basic network services (email, web, chat, collaboration) to a wide variety of Navy surface combatants, submarines, Maritime Operations Centers, Regional Network Operations and Security Centers (RNOSC) and Aircraft. In addition, hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Integrating these applications and systems is accomplished through Application Integration (AI), the engineering process used to evaluate and validate compatibility between CANES and the Navy-validated applications, systems and services that will utilize the CANES infrastructure and services. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), are dependent on the CANES Common Computing Environment (CCE) to field, host, and sustain their capability because they no longer provide their own hardware. CANES requires that Automated Digital Network System (ADNS) field prior to or concurrently with CANES due to the architectural reliance between the two programs.

CANES will develop technical updates on a rolling four year hardware baseline and a two year software baseline to ensure no cybersecurity vulnerabilities exist due to hardware and software obsolescence. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. This will allow for streamlined acquisition, contracting, and test events, and significant lifecycle efficiencies through consolidation of multiple current configuration management baselines, logistics, and training efforts into a unified support structure. Platform Sets define phases of CANES system development efforts and each platform set consists of different ship class design baselines.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>
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In FY 2017, CANES RDT&E investment will support additional development for Technical Insertion 2 (TI2) hardware and software baselines including Enterprise Engineering and Certification (E2C) laboratory test efforts. Perform systems engineering efforts to complete functional baselines and updates to technical data packages. Continue Development Testing (DT) in support of submarine baseline development. Additional funds provided in FY 2017 to design and engineer the CANES Tactical Data Cloud capability to be included in future CANES hardware and software baselines

The Communications Automation Program - This project is a continuing program that provides for automation and communications upgrades for Fleet tactical users. It includes Automated Digital Network System (ADNS) and High Frequency Internet Protocol/Sub Network Relay.

ADNS is the method by which Tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG). ADNS is the gateway to technical Wide Area Network (WAN) afloat for Internet Protocol network operations, supporting information dissemination and external connectivity. ADNS allows services and applications to interconnect to the Defense Information Systems Network (DISN) ashore via multiple Radio Frequency (RF) resources and pier connectivity.

B. Program Change Summary (\$ in Millions)	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	22.773	21.677	22.854	-	22.854
Current President's Budget	24.137	21.667	23.541	-	23.541
Total Adjustments	1.364	-0.010	0.687	-	0.687
• Congressional General Reductions	-	-0.010			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.793	0.000			
• SBIR/STTR Transfer	-0.429	0.000			
• Program Adjustments	0.000	0.000	2.400	-	2.400
• Rate/Misc Adjustments	0.000	0.000	-1.713	-	-1.713

Change Summary Explanation

Technical: N/A

Funding:
N/A

Schedule:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>
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Operational commitments for the CANES Force Level Follow-On Test and Evaluation (FOT&E) test platform caused the Force Level DT and Force Level FOT&E test events to be re-phased. Full Deployment has been re-phased to align with program's Full Deployment Decision (FDD), which was updated to accommodate acquisition documentation requirements. Additional funds provided in FY 2017 to design and engineer the CANES Tactical Data Cloud capability to be included in future CANES hardware and software baselines. FDD was achieved in 1QFY16.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)				Project (Number/Name) 0725 / Communication Automation			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0725: Communication Automation	2.332	3.089	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.421
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

A. Mission Description and Budget Item Justification

This project unit is a continuing program that provides for automation and communications upgrades for Fleet tactical users.

Automated Digital Network System (ADNS) provides routing, switching, baseband, configuration and monitoring capabilities for interconnecting naval, coalition and joint enclaves worldwide. ADNS utilizes off the shelf equipment and network protocols as specified by the Joint Technical Architecture. ADNS Increment (INC) II provides capabilities of network to Satellite Communications (SATCOM), load balancing, radio frequency restoral, Quality of Service (QoS) to include application prioritization, traffic management, compression and enhancements designed to maximize use of "effective" available bandwidth for surface, shore, and airborne platforms. ADNS INC III combines all Navy Tactical Voice, Secure Communications Interoperability Protocol (SCIP) Inter-Working Function, Video, and data requirements into a converged IP data stream. ADNS INC III supports higher bandwidth satellites, providing up to 25 mega bytes per second (Mbps) of throughput on Unit Level ships and up to 50 Mbps on Force Level ships. INC III architecture also incorporates an IPv4/IPv6 dual stack and Cipher-Text (CT) security architecture to align to the Global Information Grid (GIG) in order to mesh Navy Tactical surface, subsurface, and airborne platforms into a single IP environments with gateway functions to coalition and joint networks, in addition to greater security utilizing the High Assurance Internet Protocol Encryptor (HAiPE) devices. ADNS will serve as the Navy tactical interface for IP Networking for the JALN-M system. ADNS will investigate emerging technologies to integrate with additional Department of Defense C4I Programs to improve interstrike group networking and extend the network to the tactical edge.

In FY 2017, CANES RDT&E investment will support additional development for Technical Insertion 2 (TI2) hardware and software baselines including Enterprise Engineering and Certification (E2C) laboratory test efforts. Perform systems engineering efforts to complete functional baselines and updates to technical data packages. Continue Development Testing (DT) in support of submarine baseline development. Additional funds provided in FY 2017 to design and engineer the CANES Tactical Data Cloud capability to be included in future CANES hardware and software baselines.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Automated Digital Network System (ADNS)	3.089	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Continued testing and interfaces with ENMS, IPv6 transition, and integration of SHF. Continued the Interface Design Development (IDD) and integration with network applications, developed LOS link, Defense Information Systems Network (DISN) integration and development of Cipher-Text (CT) Piers. Investigated and recommended platform network devices, network design support to include integration with Wide Area Network (WAN) and Joint Aerial Layer Network - Maritime (JALN-M) system.</p> <p><i>FY 2016 Plans:</i> In FY 2016-2021, ADNS funding resides in PE 0204163N (Fleet Tactical Development).</p> <p><i>FY 2017 Base Plans:</i> N/A</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	3.089	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/2915: CANES (ADNS Only)	56.626	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	160.060

Remarks

D. Acquisition Strategy
Automated Digital Network System (ADNS): Evolutionary acquisition approach with overlapping development and implementation phases for defined INC I, II, and III baselines. INC I, II, and III will use competitively awarded contracts to implement changes consistent with acquisition initiatives. ADNS leverages Commercial-Off-The-Shelf (COTS) and Government Off-the-Shelf (GOTS) products while capitalizing on acquisition reform initiatives to achieve material savings in the logistics, installation, integration and training areas. Where feasible, differing types of advantageous contract vehicles will be used to provide flexibility, decrease contract administrative costs, and encourage acquisition streamlining through the use of COTS/GOTS products.

E. Performance Metrics
ADNS - Included in the ADNS program goals are the improvements to bandwidth throughput, connectivity to multiple Radio Frequency (RF) paths, greater security, and system capability delivered within a smaller form factor. The ADNS program will, at a minimum, provide bandwidth throughput enhancements resulting in an increase from 2 megabytes per

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation

second (Mbps) to 25/50 Mbps. ADNS will also provide the ability to transport data across multiple paths simultaneously vice the current limitations of single or secondary paths. ADNS will provide greater security posture by encrypting each enclave, increase performance of the routing and transport architecture while reducing physical footprint and cost, and securing the core via Cipher-Text.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering-ADNS	WR	SSC : PAC	0.453	2.034	Oct 2014	0.000		0.000		-		0.000	0.000	2.487	-
Systems Engineering-ADNS	WR	SSC : LANT	0.271	0.582	Nov 2014	0.000		0.000		-		0.000	0.000	0.853	-
Systems Engineering-ADNS	C/CPFF	Booz Allen Hamilton : San Diego, CA	0.000	0.150	Mar 2015	0.000		0.000		-		0.000	0.000	0.150	-
Integration and Test-ADNS	WR	SSC : PAC	1.159	0.000		0.000		0.000		-		0.000	0.000	1.159	-
Integration and Test-ADNS	C/CPFF	Science Applications International Corporation : San Diego, CA	0.000	0.063	Dec 2014	0.000		0.000		-		0.000	0.000	0.063	-
Systems Engineering-ADNS	WR	NUWC : Newport, RI	0.000	0.061	Aug 2015	0.000		0.000		-		0.000	0.000	0.061	-
Subtotal			1.883	2.890		0.000		0.000		-		0.000	0.000	4.773	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Studies and Design-ADNS	WR	SSC : PAC	0.000	0.049	Dec 2014	0.000		0.000		-		0.000	0.000	0.049	-
Studies and Design-ADNS	C/CPFF	Systems Research and Application : San Diego, CA	0.147	0.150	Jul 2015	0.000		0.000		-		0.000	0.000	0.297	-
Subtotal			0.147	0.199		0.000		0.000		-		0.000	0.000	0.346	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test & Evaluation-ADNS	WR	COMOPTEVFOR : Norfolk, VA	0.046	0.000		0.000		0.000		-		0.000	0.000	0.046	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.046	0.000		0.000		0.000		-		0.000	0.000	0.046	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support-ADNS	C/CPFF	Systems Research & Application : San Diego, CA	0.147	0.000		0.000		0.000		-		0.000	0.000	0.147	-
Program Management Support-ADNS	C/CPFF	Science Applications International Corporation : San Diego, CA	0.109	0.000		0.000		0.000		-		0.000	0.000	0.109	-
Subtotal			0.256	0.000		0.000		0.000		-		0.000	0.000	0.256	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2.332	3.089	0.000	0.000	-	0.000	0.000	5.421	-

Remarks
Automated Digital Network System (ADNS) - Prior to FY13 funding resides in PE 0204163N. FY13-15 funding resides in PE 0303138N. Starting in FY16, funding was realigned back into PE 0204163N for Major Automated Information System (MAIS) transparency compliance.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation
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Fiscal Year	2015				2016				2017				2018				2019				2020				2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones						PIR INC III Subs																						
System Development																												
	Interface Design Development & Integration with Network Applications and DISN																											
	Interface Design Development & Integration with Future SATCOM, JALN-M and Radio Frequency (RF) paths																											
Test & Evaluation Milestones																												
Operational Assessment (OA)																												
Development Test																												
Operational Test																												
Production																												
	Fielding & Sustainment INC III Surface																											
	Fielding & Sustainment INC III Subs																											
Deliveries																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 0725 / Communication Automation

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Fiscal Year				
Acquisition Milestones: ADNS: INCREMENT III_Subs Post Implementation Review	2	2016	2	2016
System Development: ADNS: INCREMENT III_Interface Design Development and Integration with Network Applications and Defense Information Systems Network (DISN)	1	2015	4	2021
System Development: ADNS: INCREMENT III_Interface Design Development and Integration with SATCOM, Joint Aerial Layer Network-Maritime (JALN-M) and Radio Frequency (RF) paths	1	2015	4	2021
Production: ADNS: INCREMENT III_Fielding and Sustainment INC III Surface	1	2015	4	2021
Production: ADNS: INCREMENT III_Fielding and Sustainment INC III Submarines	1	2015	4	2021
Production: ADNS: INCREMENT III_Full Operational Capability	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 9C87 / CANES Integration
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9C87: CANES Integration	137.069	21.048	21.667	23.541	-	23.541	23.922	22.143	22.803	23.286	339.460	634.939
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Consolidated Afloat Networks & Enterprise Services (CANES) is the Navy's only Program of Record (POR) to replace existing afloat networks and provide the necessary infrastructure for applications, systems, and services required for the Navy to dominate the Cyber Warfare domain. CANES is the technical and infrastructure consolidation of existing, separately managed afloat networks including Integrated Shipboard Network Systems (ISNS), Combined Enterprise Regional Information Exchange System - Maritime (CENTRIXS-M), Sensitive Compartmented Information (SCI) Networks, and Submarine Local Area Network (SubLAN). These legacy afloat network designs are currently End of Life and CANES will replace these unaffordable and obsolete networks.

The fundamental goal of CANES is to bring Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), within which current and future iterations of Navy Tactical Network computing and storage capabilities will reside. CANES will provide complete infrastructure, inclusive of hardware, software, processing, storage, and end user devices for Unclassified, Coalition, Secret and SCI for all basic network services to a wide variety of Navy surface combatants, submarines, Maritime Operations Centers, Regional Network Operations and Security Centers (RNOSC) and Aircraft. In addition, hosted applications and systems inclusive of Command and Control, Intelligence, Surveillance and Reconnaissance, Information Operations, Logistics and Business domains require the CANES infrastructure to operate in the tactical environment. Integrating these applications and systems is accomplished through Application Integration (AI), the engineering process used to evaluate and validate compatibility between CANES and the Navy-validated applications, systems and services that will utilize the CANES infrastructure and services. Specific programs, such as Distributed Common Ground System - Navy (DCGS-N), Global Command and Control System - Maritime (GCCS-M), Naval Tactical Command Support System (NTCSS), and Undersea Warfare Decision Support System (USW-DSS), are dependent on the CANES Common Computing Environment (CCE) to field, host, and sustain their capability because they no longer provide their own hardware. CANES requires that Automated Digital Network System (ADNS) field prior to or concurrently with CANES due to the architectural reliance between the two programs.

CANES will develop technical updates on a rolling four year hardware baseline and a two year software baseline to ensure no cybersecurity vulnerabilities exist due to hardware and software obsolescence. CANES is based on the overarching concept of reducing the number of afloat networks and providing enhanced efficiency through a single engineering focus on integrated technical solutions. This will allow for streamlined acquisition, contracting, and test events, and significant lifecycle efficiencies through consolidation of multiple current configuration management baselines, logistics, and training efforts into a unified support structure. Platform Sets define phases of CANES system development efforts and each platform set consists of different ship class design baselines.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: CANES Integration	21.048	21.667	23.541	0.000	23.541
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>	Project (Number/Name) 9C87 / <i>CANES Integration</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Continued development of Technical Insertion (TI) software baselines. Completed Platform Sets 3 & 4 baseline development. Performed systems engineering efforts to complete functional baselines and updates to technical data packages. Continued testing events at Enterprise Engineering and Certification (E2C) laboratory for TI software baseline and Platform Set 3 & 4. Performed Developmental Testing (DT) and initiated Follow-on Operational Test & Evaluation (FOT&E) in support of force level testing. Conducted CANES Hyper Converged Infrastructure Innovation Pilot (CHIIP) requirement definitization.</p> <p><i>FY 2016 Plans:</i> Achieved Full Deployment Decision (FDD). Complete TI software baseline development and initiate development for TI 2 hardware and software baseline including E2C laboratory test efforts. Perform systems engineering efforts to complete functional baselines and updates to technical data packages. Complete FOT&E in support of force level testing.</p> <p><i>FY 2017 Base Plans:</i> Perform TI 2 hardware and software baseline testing, including E2C laboratory test efforts. Perform systems engineering efforts to complete functional baselines, to include incorporation of CANES Tactical Data Cloud capability, and update technical data packages. Perform DT in support of submarine baseline development. Initiate FOT&E in support of submarine testing. Perform DT Assist for TI 2 hardware and software development.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	21.048	21.667	23.541	0.000	23.541

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN/2915: <i>CANES</i>	355.046	275.641	212.030	-	212.030	349.727	417.519	395.807	346.850	4,203.681	7,270.255
• OPN/2925: <i>CANES Intell</i>	61.215	28.695	36.013	-	36.013	47.602	58.957	56.255	48.791	684.320	1,215.665

Remarks

D. Acquisition Strategy

CANES is an ACAT IAC Major Automated Information System (MAIS) program. The program office is employing a multiple-phase, multiple-award down-select contract strategy to reduce program risks and maintain competition in both design development and production during contract performance. Milestone C was achieved in

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
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1QFY13 and Full Deployment Decision (FDD) was achieved in 1QFY16. In 2QFY15, a separate full and open indefinite delivery indefinite quantity (IDIQ) multiple award contract (MAC) production contract was awarded to support future production. CANES will develop technical updates on a rolling four year hardware baseline and a two year software baseline to ensure no cybersecurity vulnerabilities exist due to hardware and software obsolescence.

E. Performance Metrics

Early RDT&E investment and sustainment of dual design contractors through the development phase reduced Total Ownership Cost (TOC) from Milestone B to Milestone C. Cost avoidance throughout the life of the program is based on 1) reducing the number of networks through the use of mature, certified, cross domain technologies; 2) reducing the infrastructure footprint and associated costs for hardware afloat; and 3) providing increased capability to meet current and projected war fighter requirements.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 9C87 / CANES Integration
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Product Development	Various	Various : Various	52.910	0.000		0.000		0.000		-		0.000	0.000	52.910	22.329
Primary Hardware Development	WR	SSC : San Diego, CA and Charleston, SC	27.248	11.314	Nov 2014	6.814	Nov 2015	7.411	Nov 2016	-		7.411	192.514	245.301	209.438
Primary Hardware Development	C/CPFF	AUSGAR : San Diego, CA	0.000	0.182	Mar 2015	0.240	Mar 2016	0.261	Dec 2016	-		0.261	0.000	0.683	-
Primary Hardware Development	C/CPFF	ImagineOne : Colonial Beach, VA	0.000	0.432	Feb 2015	1.186	Dec 2015	0.380	Dec 2016	-		0.380	0.000	1.998	-
Primary Hardware Development	C/CPFF	NSMA : Washington DC	0.000	0.000		0.660	Apr 2016	0.717	Feb 2017	-		0.717	0.000	1.377	-
Primary Software Development	WR	SSC : San Diego, CA and Charleston, SC	15.253	5.094	Nov 2014	7.113	Nov 2015	7.723	Nov 2016	-		7.723	52.439	87.622	48.574
Primary Software Development	C/CPFF	Carahsoft : Reston, VA	0.000	0.000		0.193	Mar 2016	0.210	Apr 2017	-		0.210	0.000	0.403	-
Systems Engineering	C/CPFF	BAH : San Diego, CA	0.690	0.703	Mar 2015	0.220	Feb 2016	0.239	Jan 2017	-		0.239	0.000	1.852	0.690
Systems Engineering	C/CPFF	SAIC : San Diego, CA	0.000	0.277	Sep 2015	0.169	Mar 2016	0.184	Jan 2017	-		0.184	0.000	0.630	-
Systems Engineering	WR	SSC : San Diego, CA and Charleston, SC	22.630	0.000		2.901	Nov 2015	3.558	Nov 2016	-		3.558	45.743	74.832	50.798
Systems Engineering	MIPR	US ARMY CECOM (MITRE) : San Diego, CA	2.198	0.024	Jul 2015	0.000		0.500	Nov 2016	-		0.500	5.722	8.444	19.934
Systems Engineering	C/CPFF	CSA : San Diego, CA	0.000	0.165	Dec 2014	0.556	Feb 2016	0.604	Feb 2017	-		0.604	0.000	1.325	-
Subtotal			120.929	18.191		20.052		21.787		-		21.787	296.418	477.377	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Studies & Design	MIPR	Washington HQ Services : Washington DC	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	0.650

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 9C87 / CANES Integration
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Studies & Design	WR	SSC : San Diego, CA	0.000	0.388	Feb 2015	0.218	Mar 2016	0.237	Nov 2016	-		0.237	0.000	0.843	-
Studies and Design	C/CPFF	SRA : San Diego, CA	0.000	0.000		0.117	Mar 2016	0.127	Jan 2017	-		0.127	0.000	0.244	-
Certification Authority	C/CPFF	AUSGAR : San Diego, CA	0.527	0.773	Mar 2015	0.349	Mar 2016	0.379	Mar 2017	-		0.379	10.987	13.015	-
Certification Authority	C/CPFF	NSMA : Washington, DC	0.000	0.370	Jun 2015	0.000		0.000		-		0.000	0.000	0.370	-
Certification Authority	C/CPFF	Innovative Defense Technologies : Arlington, VA	0.000	0.167	Jul 2015	0.000		0.000		-		0.000	0.000	0.167	-
Subtotal			1.177	1.698		0.684		0.743		-		0.743	10.987	15.289	-

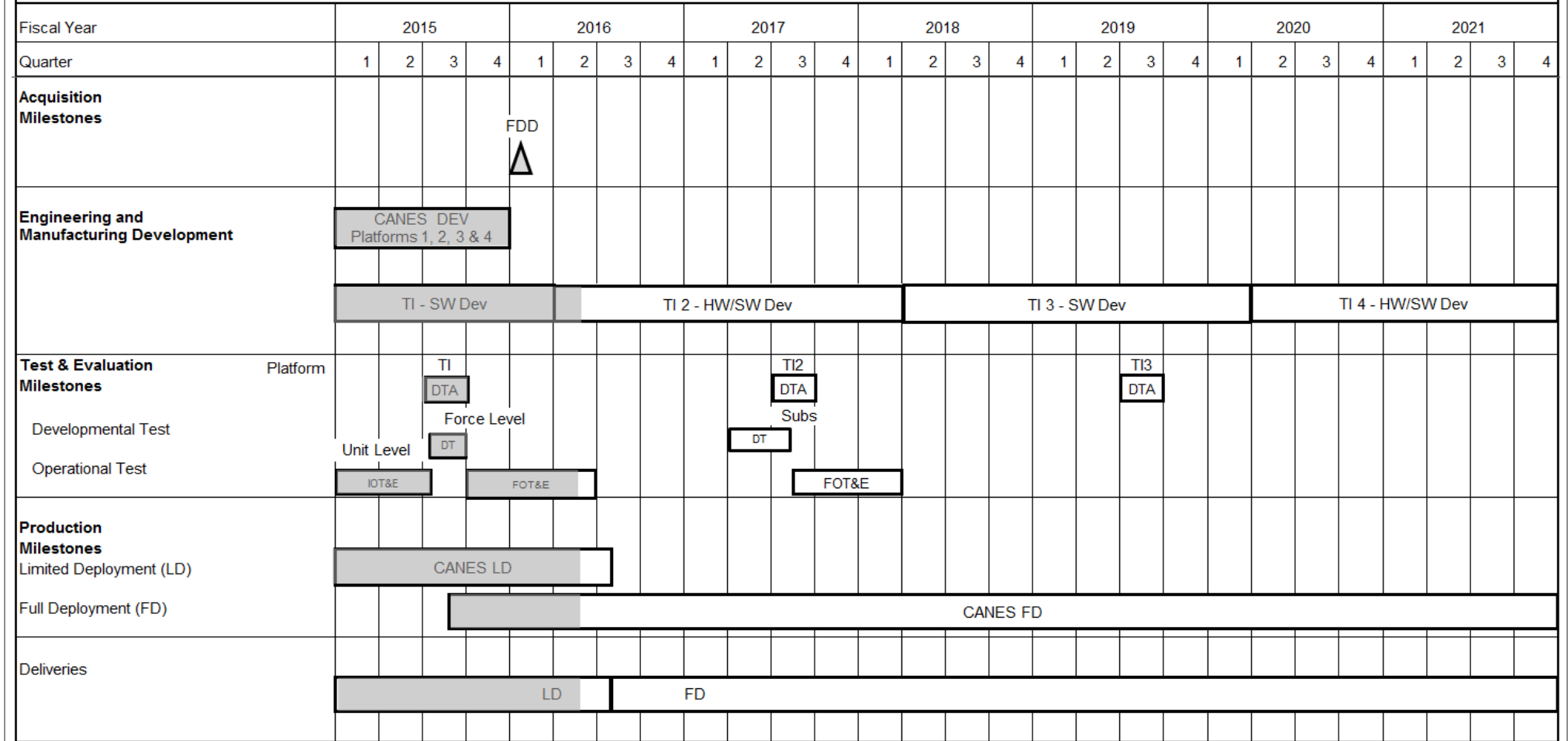
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Test & Evaluation	WR	COTF : Norfolk, VA	1.360	0.704	Mar 2015	0.440	Mar 2016	0.478	Mar 2017	-		0.478	8.510	11.492	5.891
Development Test & Evaluation	C/CPFF	SSC : San Diego, CA	0.201	0.205	Dec 2014	0.241	Nov 2015	0.262	Nov 2016	-		0.262	3.967	4.876	-
Development Test & Evaluation	MIPR	JITC : Fairfax, VA	1.118	0.250	Nov 2014	0.250	Nov 2015	0.271	Nov 2016	-		0.271	4.015	5.904	4.673
Development Test & Evaluation	MIPR	DTIC : Ft Belvoir, VA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
Subtotal			2.779	1.159		0.931		1.011		-		1.011	16.492	22.372	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Management Services	Various	Various : Various	11.980	0.000		0.000		0.000		-		0.000	0.000	11.980	2.742

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>	Project (Number/Name) 9C87 / <i>CANES Integration</i>
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / Consolidated Afloat Network Ent Services(CANES)	Project (Number/Name) 9C87 / CANES Integration

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Fiscal Year				
Acquisition Milestone: Acquisition Milestone - Full Deployment Decision Review (FDD)	1	2016	1	2016
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - Platform Set 1, 2, 3 & 4	1	2015	4	2015
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - Technical Insertion (TI) Software (SW) Development	1	2015	1	2016
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 2 Hardware (HW)/SW Development	2	2016	1	2018
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 3 SW Development	2	2018	1	2020
Engineering and Manufacturing Development: Platform: Engineering and Manufacturing Development - TI 4 Hardware (HW)/SW Development	2	2020	4	2021
Test & Evaluation Milestone: Development Test: Developmental Test - Force Level	3	2015	3	2015
Test & Evaluation Milestone: Development Test: Developmental Test - Sub	2	2017	3	2017
Test & Evaluation Milestone: Development Test: Development Test Assist - TI	3	2015	3	2015
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 2	3	2017	3	2017
Test & Evaluation Milestone: Development Test: Development Test Assist- TI 3	3	2019	3	2019
Test & Evaluation Milestone: Operational Test: Operational Test - Initial Operational Test & Evaluation (IOT&E)	1	2015	3	2015
Test & Evaluation Milestone: Operational Test: Operational Test Force Level - Follow-on Operational Test & Evaluation (FOT&E)	4	2015	2	2016
Test & Evaluation Milestone: Operational Test: Operational Test - FOT&E Sub	3	2017	1	2018
Production Milestone: Limited Deployment: Production Milestone - Limited Deployment (LD)	1	2015	3	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303138N / <i>Consolidated Afloat Network Ent Services(CANES)</i>	Project (Number/Name) 9C87 / <i>CANES Integration</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestone: Full Deployment: Production Milestone - Full Deployment (FD)	3	2015	4	2021
Deliveries: Deliveries - Limited Deployment (LD)	1	2015	3	2016
Deliveries: Deliveries - Full Deployment (FD)	3	2016	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	370.451	22.655	28.081	38.510	-	38.510	39.701	31.128	31.399	32.092	Continuing	Continuing
0734: <i>Communications Security R&D</i>	359.957	18.773	25.953	36.987	-	36.987	37.302	28.755	29.182	29.828	Continuing	Continuing
3230: <i>Information Assurance</i>	10.494	3.882	2.128	1.523	-	1.523	2.399	2.373	2.217	2.264	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Information Systems Security Program (ISSP) ensures the protection of Navy and joint cyberspace systems from exploitation and attack. Cyberspace systems include wired and wireless telecommunications systems, Information Technology (IT) systems, and the content processed, stored, or transmitted therein. The ISSP includes the protection of the Navy's National Security Systems and Information (NSSI). The ISSP must be rapid, predictive, adaptive, and tightly coupled to cyberspace technology. ISSP provides architectures, products, and services based on mission impacts, information criticality, threats, vulnerabilities, and required defensive countermeasure capabilities.

FY17 will focus on efforts that address the risk management of cyberspace, which includes the capabilities to protect, detect, restore, and respond. The ISSP provides the Navy with the following cybersecurity elements: (1) defense of NSSI, including the Nuclear Command, Control, and Communications (NC3) system, naval weapons systems, critical naval infrastructure for Command, Control, Communications, Computers, & Intelligence (C4I) Afloat and Shore Networks, joint time and navigation systems, and industrial control systems using modern cryptographic solutions; (2) assured separation of information levels and user communities, including allied, coalition, non-Governmental, Defense Industrial Base, and other public partners; (3) technologies supporting the Navy's Computer Network Defense (CND) service provider to include Task Force Cyber Awakening (TFCA) and Operation Rolling Tide (ORT)/Cyber Remediation capabilities that will accelerate the Navy's ability to prevent, constrain, and mitigate cyberattacks and critical vulnerabilities, as well as Navy Cyber Situational Awareness (NCSA) technologies that will provide greatly improved cyber threat intelligence and situational awareness, from external boundaries to tactical edge infrastructures; (4) assurance of the Navy's telecommunications infrastructure and the wireless spectrum; (5) SHARKCAGE provides the mechanisms to sense cyber threats across all Navy shore and afloat networks to reduce the complexities of monitoring, assessing, and detecting adversary activities across multiple enclaves (e.g. Non-secure Internet Protocol (IP) Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), C4I, Combat Systems, Hull Mechanical & Electrical (HM&E), etc.); (6) assurance of joint-user cyberspace domains, using a defense-in-depth security architecture and its alignment with the Joint Regional Security Stack (JRSS); (7) assurance of the critical computing base and information store; (8) assurance of mobile and cloud computing; and (9) supporting assurance technologies, including the Public Key Infrastructure (PKI) and Key Management (KM).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	23.016	28.102	29.595	-	29.595
Current President's Budget	22.655	28.081	38.510	-	38.510
Total Adjustments	-0.361	-0.021	8.915	-	8.915
• Congressional General Reductions	-	-0.021			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.361	0.000			
• Program Adjustments	0.000	0.000	11.600	-	11.600
• Rate/Misc Adjustments	0.000	0.000	-2.685	-	-2.685

Change Summary Explanation

Technical:

Computer Network Defense (CND):

- Additional capabilities to provide cyber security and Navy Cyber Situational Awareness (NCSA) for the Navy's portion of the Nuclear Command and Control Communications (NC3-N) system of systems.
- SHARKCAGE provides mechanisms to sense cyber threats across all Navy shore and afloat networks.

Navy Cryptography (Crypto):

- Advanced Cryptographic Capability (ACC) replaces legacy and combines legacy requirements with additional security enhancements.

Key Management (KM):

- KMI CI-3 Spiral 3 also referred to as KMI Tech Refresh.
- Intermediary Application (iApp) Development and Product Testing to extend through FY21 to incorporate KMI CI-3 Spiral 3 capabilities.

Schedule:

Computer Network Defense (CND):

- Due to the dynamic nature of cyber security CND builds were adjusted to include various Cyber Remediation capabilities to include: Operation Rolling Tide (ORT)/ Task Force Cyber Awakening (TFCA) / Navy Cyber Situational Awareness (NCSA).

Navy Cryptography (Crypto):

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
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<p>-VINSON/Advanced Narrowband Digital Voice Terminal (ANDVT) Cryptographic Modernization (VACM) Initial Operational Test and Evaluation (IOT&E) was completed in 2QFY15, Full Rate Production (FRP) decision shifted from 3QFY15 to 2QFY16 due to revised Air Force schedule. Initial Operational Capability (IOC) shifted from 3QFY16 to 4QFY16 due to revised estimated lead times from contract award to delivery.</p> <ul style="list-style-type: none">- Link 22 (L22) Technical Readiness Review (TRR) 2 was completed in 2QFY15. L22 Full Development Delivery and L22 Production Readiness Review (PRR) shifted from 2QFY15 to 4QFY15 due to changes in vendor's schedule.- Transmission Security (TRANSEC) studies and analysis continued through 4QFY16 and initiation of Modern TRANSEC development shifted from 3QFY15 to 3QFY16 to establish system of systems strategies across multiple Program of Records (PORs), due to support for Navy-wide and DoD-wide efforts. TRANSEC Development and Product Testing and Advanced Cryptographic Capability (ACC) Solutions Development and Product Tests ending 4QFY19 to meet fielding requirements for national mandates. <p>Key Management (KM):</p> <ul style="list-style-type: none">- Key Management Infrastructure (KMI) Capability Increment-2 (CI-2) Spiral 2 Spin 1 Fielding Decision (FD) shifted from 2QFY15 to 3QFY15, to reflect actual date FD achieved.- KMI CI-2 Spiral 2/Spin 2 Developmental Testing (DT) shifted from 2QFY15 to 2QFY16, CI-2 Spiral 2/Spin 2 Operational Assessment (OA) shifted from 3QFY15 to 2QFY16, and CI-2 Spiral 2/Spin 2 FD shifted from 4QFY15 to 4QFY16, in accordance with NSA schedule.- KMI CI-2 Spiral 2/Spin 3 DT shifted from 2QFY16 to 4QFY16, CI-2 Spiral 2/Spin 3 OA shifted from 3QFY16 to 1QFY17, and CI-2 Spiral 2/Spin 3 FD shifted from 3QFY16 to 3QFY17, in accordance with NSA schedule.- KMI CI-2 Spiral 2/Spin 4 DT shifted from 4QFY16 to 2QFY17, CI-2 Spiral 2/Spin4 OA shifted from 1QFY17 to 2QFY17, CI-2 Spiral 2/Spin 4 FD shifted from 2QFY17 to 3QFY17, in accordance with NSA schedule.- KMI CI-2 Spiral 2/Spin 4 Full Operational Test and Evaluation (FOT&E) and Full Deployment Decision (FDD) included in 4QFY17, in accordance with NSA schedule.- KMI CI-3 Spiral 3 / Technical Refresh Contract Award added in 2QFY19.- Extended Intermediary Application (iApp) development effort out to FY21 to incorporate KMI CI-3 capabilities.- KMI CI-3 Spiral 3/Spin 2 OA included in 1QFY21 and FD included in 2QFY21. <p>Funding:</p> <p>Computer Network Defense (CND): Increase in FY17 supports cyber security system development for the Navy's portion of the Nuclear Command and Control Communications (NC3-N) system of systems; Navy Cyber Situational Awareness (NCSA) Common Operational Picture and other analytic development for NC3-N; Development of SHARKCAGE, which provides the mechanisms to sense cyber threats across all Navy shore and afloat networks to reduce the complexities of monitoring, assessing, and detecting adversary activities across multiple enclaves.</p> <p>FY 2017 decrease in Information Systems Security Program RDTEN by \$1.61M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.</p> <p>The FY 2017 funding request was also reduced by \$0.55M to account for the availability of prior year execution balances.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>				Project (Number/Name) 0734 / <i>Communications Security R&D</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0734: <i>Communications Security R&D</i>	359.957	18.773	25.953	36.987	-	36.987	37.302	28.755	29.182	29.828	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Information Systems Security Program (ISSP) Research Development Test & Evaluation (RDT&E) efforts provide cybersecurity and Defensive Cyberspace Operations (DCO) solutions to protect the forward deployed, bandwidth-limited, highly mobile naval information subscriber and the associated command, control, and communications required to achieve the integrated military advantage from Net-Centric operations. The ISSP addresses engineering design, development, modeling, simulation, test, and evaluation for the unique cybersecurity challenges associated with dispersed, bandwidth-limited, and forward-tactical connected U.S. Navy communications systems.

This project includes a rapidly evolving design and application engineering effort to modernize cryptographic equipment and ancillaries with state-of-the-art replacements to counter evolving and increasingly sophisticated threats. Communications Security (COMSEC) and Transmission Security (TRANSEC) are evolving from stand-alone, dedicated devices to embedded modules incorporating National Security Agency (NSA) approved cryptographic engines, loaded with the certified algorithms and key, and interconnected via industry-defined interfaces. This includes the Department of Defense (DoD) Information Network (DoDIN) capability requirements document for the development of Content Based Encryption (CBE).

In addition to protecting national security information, the ISSP provides enterprise-wide cybersecurity for statutorily protected information. The ISSP must also provide solutions to the most advanced state-sponsored and criminal-intent Advanced Persistent Threats (APT), including those to Platform Information Technology (PIT), weapons systems, Industrial Control Systems (ICS), and Supervisory Control and Data Acquisition (SCADA).

The ISSP provides dynamic risk-managed cybersecurity solutions to the Navy information infrastructure (i.e., C4I Afloat and Shore Networks), not just security devices placed within a network. Few technology areas change as fast as telecommunications, computers and network security, resulting in the need for continuous evaluation, development, and testing of cybersecurity products and cyber defense strategies. The ISSP efforts in support of this environment include developing or applying: (1) Computer Network Defense (CND) cybersecurity technologies required to support strategic and tactical cyber operations; (2) Task Force Cyber Awakening (TFCA) initiatives, specifically Navy Cyber Situational Awareness (NCSA), and Operation Rolling Tide (ORT)/Cyber Remediation capabilities that will accelerate the Navy's ability to prevent, constrain, and mitigate cyberattacks and critical vulnerabilities and improve overall situational awareness of network status; (3) technology to interconnect networks of dissimilar classification and need-to-know, known respectively as Cross Domain Solutions (CDS) and Virtual Secure Enclaves (VSE); (4) new cryptography secure voice and secure data prototypes and protocols and associated technology for capable programmable COMSEC and TRANSEC devices and software; (5) Key Management (KM); (6) Public Key Infrastructure (PKI) and associated access control technologies that provide assured and persistent Identity and Access Management (IdAM) for persons, virtual instances, and connected devices.

FY 17 Highlights for Information Systems Security Programs (ISSP):

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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ISSP efforts that address the risk management of cyberspace, which includes the capabilities to protect, detect, restore, and respond to the following: (1) Technologies supporting the Navy's Computer Network Defense (CND) service provider and the advancement of critical TFCA and ORT/Cyber Remediation initiatives, that will accelerate the Navy's ability to prevent, constrain, analyze and mitigate cyberattacks and critical vulnerabilities, as well as NCSA capabilities that will provide greatly improved cyber threat intelligence and situational awareness; (2) Navy Crypto engineering efforts to modernize cryptographic equipment and ancillaries with state-of-the-art replacements to counter evolving and increasingly sophisticated threats to the Navy's telecommunications infrastructure and the wireless spectrum; (3) supporting assurance technologies, including EKMS/KMI and the PKI/IdAM; (4) Cybersecurity services that continue to provide security systems engineering support for the development of DoD and Department of Navy (DoN) cybersecurity architectures, alignment with JRSS, and the transition of new technologies to address Navy cybersecurity challenges.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Computer Network Defense (CND)	8.361	15.872	24.190	0.000	24.190
Articles:	-	-	-	-	-
<p>FY 2015 Accomplishments: Provided Operation Rolling Tide (ORT)/Cyber Remediation initiatives within the Navy's CND program in order to achieve improved network defense and security wholeness. Continued to develop, integrate, and test CND Builds, Defense-in-depth(DiD) and Situational Awareness (SA) technologies for knowledge-empowered CND operations for shore sites and Command, Control, Communications, Computers and Intelligence (C4I) afloat platforms. Continued to develop new capabilities for the Navy's Command and Control (C2) architecture and provided technical guidance to ensure CND requirements are met by Consolidated Afloat Networks and Enterprise Services (CANES). Continued to implement Department of Defense (DoD) and United States Cyber Command (USCC) cybersecurity tools and mandated tools into ONE-Net and C4I networks. Continued to evaluate needs derived from stakeholders and the CND Capabilities Steering Group (CCSG) and developed, updated, and integrated CND suites. Provided Vulnerability Remediation Asset Manager (VRAM) tool to include Online Compliance Reporting System (OCRS) capabilities and Assured Compliance Assessment Solution (ACAS) rollup. Began development and implementation of an optimal technical and governance solution for interception of outbound encrypted traffic. Initiated integration and testing of Secure Socket Layer (SSL) intercept to achieve compliance with Defense Information Security Agency (DISA) firewall security guidance. Continued to further efforts to virtualize CND capabilities and consolidate cybersecurity services in the ONE-Net environment. Started analysis to replace and assume acquisition management of Navy Cyber Defense Operations Command's (NCDOC) tactical sensor infrastructure. Continued to support Command 10th Fleet (C10F) Navy Cyber Situational Awareness (NCSA) efforts by deploying integrated tools at the C10F Maritime Operations Center (MOC) to support C2 of the communications systems. Continued to develop Joint Capability</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Technology Demonstration (JCTD) Virtual Secure Enclave (VSE) to segment networks and adaptively manage operational risks.</p> <p>FY 2016 Plans: Continue to develop Task Force Cyber Awakening (TFCA), specifically NCSA and ORT/Cyber Remediation initiatives. Funding will provide additional capabilities within the Navy's CND program in order to accelerate advanced cybersecurity initiatives to achieve improved network defense and security wholeness. Additional capabilities to include network vulnerability remediation, security compliance reporting, mapping of Navy networks in order to automate real time cybersecurity capabilities critical to the warfighter and will support C2 of Cyber by providing a Data-as-a-Service capability to monitor the cyber environment (CE) by ingesting data from numerous data feeds then plan and direct kinetic/non-kinetic operations within the CE. Continue to develop, integrate, and test CND Builds, DiD and SA technologies for knowledge-empowered CND operations for shore sites and afloat platforms. Continue to develop new capabilities for the Navy's C2 architecture and provide technical guidance to ensure CND requirements are met by CANES. Continue to implement DOD and USCC cybersecurity tools and mandates into ONE-Net and C4I networks. Continue to evaluate needs derived from stakeholders and the CCSG, and develop, update, and integrate CND suites. Provide VRAM tool to include OCRS and Continuous Monitoring Risk Score (CMRS) capabilities. Continue to develop and implement an optimal technical and governance solution for interception of outbound encrypted traffic. Continue integration and testing of SSL intercept to achieve compliance with DISA firewall security guidance. Further efforts to virtualize CND capabilities and consolidate cybersecurity services in the ONE-Net environment. Continue analysis to replace and assume acquisition management of NCDOD tactical sensor infrastructure. Continue to support C10F NCSA efforts by deploying integrated tools at the C10F MOC to support C2 of the communications systems. Continue to develop JCTD VSE to segment networks and adaptively manage operational risks.</p> <p>FY 2017 Base Plans: Continue to develop Navy's portion of the Nuclear Command and Control Communications (NC3-N) and Ballistic Missile Defense (BMD) cyber security system of systems; Navy Cyber Situational Awareness (NCSA) Common Operational Picture and other analytic development for NC3-N; Development of SHARKCAGE, which provides the mechanisms to sense cyber threats across all Navy shore and afloat networks to reduce the complexities of monitoring, assessing, and detecting adversary activities across multiple enclaves (e.g. Nonsecure Internet Protocol (IP) Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), C4I, Combat Systems, Hull Mechanical & Electrical (HM&E), etc.). Additionally, funding is for the development of event collection/analysis components for shore nodes and flyaway kits for deployed Cyber Protection Teams (CPT). Complete development and engineering efforts on ORT/Cyber Remediation initiatives. Continue to support</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>C10F NCSA initiatives through the deployment of integrated Cyber SA tools that enhance C10F MOC ability to support/administer C2 of Navy networks and communication systems within Cyber Key Terrain (CKT) domain(s). Continue to develop, integrate, and test CND Inc 2 Builds, DiD, and SA technologies for knowledge-empowered CND operations for shore sites and afloat platforms within Navy's ONE-Net and C4I networks to achieve improved network defense and security wholeness. Continue to evaluate needs derived from stakeholders and the CCSG, and develop, update, and integrate CND suites. Continue to provide technical guidance to support deployment of new CND capabilities by CANES. Continue integration and testing of SSL intercept to achieve compliance with DISA firewall security guidance. Continue to implement DOD and USCC cybersecurity tools and mandates into ONE-Net and C4I networks. Continue efforts to further virtualize CND capabilities for more effective and cost-efficient deployment of cybersecurity technologies. Continue enhancing the VRAM tool per Fleet Cyber Command 10th Fleet (FCC/C10F) reporting requirements. Continue development and implementation of an optimal technical and governance solution for interception of outbound encrypted traffic. Continue to develop, integrate, and test solution to replace and assume acquisition management of NCDOC tactical sensor infrastructure. Continue to develop JCTD VSE to segment networks and adaptively manage operational risks.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Navy Cryptography (Crypto)</p> <p align="right">Articles:</p>	5.570	5.414	7.642	0.000	7.642
<p>FY 2015 Accomplishments: Delivered 10 Link-22 Modernized Link Level Communications Security (MLLC) Full Development units. Continued studies and analysis for Transmission Security (TRANSEC) replacement products, which included other Navy Program of Record (POR) interdependencies. Continued to provide security engineering support for modernization of Department of the Navy (DoN) crypto systems, embeddable crypto modernization strategies and Next Generation Crypto initiatives to include tactical radios and Communications Data Link System/Tactical Common Data Link (CDLS/TCDL). Continued to provide engineering support to National Security Agency (NSA) certification authority, acquisition authority, and data testing on all crypto modernization efforts. Continued to investigate impacts of upcoming NSA security enhancements for crypto modernization products to include Advanced Cryptographic Capability (ACC) efforts. Researched and studied the follow-on alternatives for Secure Telephone Equipment (STE) modernization. Continued to provide Vinson/Advanced Narrowband Digital Voice Terminal (ANDVT) Cryptographic Modernization (VACM) technical engineering support on behalf of DoN.</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Performed VACM Initial Operational Test & Evaluation (IOT&E). Continued to provide engineering support for the modernization of VACM ancillary devices. Completed Link-22 MLLC Test Readiness Review (TRR) 2. Completed Link-22 MLLC Production Readiness Review (PRR).</p> <p>FY 2016 Plans: Complete TRANSEC studies and analysis, deliver Analysis of Alternatives (AoA) replacement products and initiate development efforts to modernize legacy devices, which included other Navy Program of Record (POR) interdependencies, and initiate developmental testing across multiple products. Continue to provide security engineering support for modernization of DoN crypto systems, embeddable crypto modernization strategies and Next Generation Crypto initiatives to include tactical radios and CDLS/TCDL. Continue to provide support for NSA certification authority, acquisition authority and data testing for all Crypto Modernization efforts. Continue to investigate impacts of upcoming NSA security enhancements for crypto modernization products. Initiate ACC development and testing across multiple products. Achieve Full Rate Production (FRP) decision. Achieve VACM Initial Operational Capability (IOC). Continue modernization of VACM ancillary devices.</p> <p>FY 2017 Base Plans: Accelerate TRANSEC replacement products development and continue developmental testing across multiple products. Continue to provide security engineering support for modernization of DoN crypto systems, embeddable crypto modernization strategies, and Next Generation Crypto initiatives to include tactical radios and Communications Data Link System/Tactical Common Data Link (CDLS/TCDL). Continue to provide support for NSA certification authority, acquisition authority and data testing for all Crypto Modernization efforts. Continue to investigate impacts of upcoming NSA security enhancements for crypto modernization products. Continue ACC development and testing across multiple products. Continue modernization of VACM ancillary devices. Develop Navy strategy and implementation plan to modernize secure voice architectures within Navy networks.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Key Management (KM)</p> <p align="right">Articles:</p>	2.472	2.229	2.363	0.000	2.363
<p>FY 2015 Accomplishments: Achieved Key Management Infrastructure (KMI) Capability Increment (CI)-2 Spiral 2/Spin 1 Fielding Decision (FD). Continued to define KMI CI-3/Tech Refresh capability requirements. Continued migrating Communications Security (COMSEC) Material Workstation (CMWS) and the follow on to Simple Key Loader (SKL) into the KMI environment. Continued the development, engineering and testing of Intermediary Application</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>(iApp), which enhanced the accounting for and distribution of KMI key delivery. Initiated Spiral 2/Spin 3 development efforts and provided engineering support to NSA to ensure Navy requirements were met. Initiated development and provided engineering support to NSA to ensure Navy requirements were met in KMI Spiral 2/Spin 4 capabilities.</p> <p>FY 2016 Plans: Monitor and track capability verification testing to include vendor Development Testing (DT), Operational Assessment (OA) and achieve FD in support of KMI CI-2 Spiral 2/Spin 2. Complete Spiral 2/Spin 3 capability engineering, development, and vendor DT. Continue Spiral 2/Spin 4 capability engineering and development. Continue to define capability requirements for KMI CI-3/Tech Refresh. Continue migrating CMWS and the follow on to SKL into the KMI environment. Continue the development, engineering and testing to the Intermediary Application (iApp) which will enhance the accounting for and distribution of KMI key delivery.</p> <p>FY 2017 Base Plans: Continue to monitor and track capability verification testing to include vendor Operational Assessment (OA) and achieve Fielding Decision (FD) in support of KMI Capability Increment (CI)-2 Spiral 2/Spin 4. Complete Spiral 2/Spin 4 capability engineering, development and vendor Developmental Testing (DT), OA and achieve FD. Achieve Full Operational Test & Evaluation (FOT&E) and Full Deployment Decision (FDD) for KMI Spiral 2. Continue migrating CMWS and the follow on to SKL into the KMI environment. Initiate the development, engineering and testing of CI-3/Tech Refresh, including the integration of iApp, which will enhance the accounting for and distribution of KMI key delivery.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Public Key Infrastructure (PKI)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued Navy compliance and compatibility with DoD PKI implementation, cryptographic algorithms and development efforts, to include Computer Network Defense (CND), Elliptic Curve Cryptography (ECC), Secure Hash Algorithms (SHA-256), Navy Certificate Validation Infrastructure (NCVI), Common Access Card (CAC), Alternate Logon Token (ALT), and Secret Internet Protocol Router Network (SIPRNet) Token. Continued research, test and evaluation of Non-Classified Internet Protocol Router Network (NIPRNet) Enterprise Alternate Token System (NEATS), PKI authentication capabilities to support mobile devices, tools to support certificates</p>	0.315	0.354	0.350	0.000	0.350
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>for Non-Person Entity (NPE), and Identity and Access Management (IdAM) to support in tactical/austere environments and increase information security.</p> <p>FY 2016 Plans: Continue Navy compliance and compatibility with DoD PKI implementation, cryptographic algorithms and development efforts, to include CND, ECC, SHA-256, NCVI, CAC, ALT, and SIPRNet Token. Continue research, test and evaluation of the NEATS, and continue researching tools to support certificates for NPE. Continue researching and testing PKI authentication capabilities to support mobile devices, IdAM in tactical/austere environments and increase information security, and begin Real-time Automated Personnel Identification System (RAPIDS) Operating Systems (OS) testing.</p> <p>FY 2017 Base Plans: Continue Navy compliance and compatibility with DoD PKI implementation, cryptographic algorithms and development efforts, to include CND, ECC, SHA-256 and other encryption methodologies, NCVI, CAC, ALT, and SIPRNet Token. Continue research, test and evaluation of NEATS, NPE, PKI authentication capabilities to support mobile devices, IdAM technologies, and RAPIDS OS.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Cybersecurity Services</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued to provide security systems engineering support for the development of DoD and DoN cybersecurity architectures and the transition of new technologies to address Navy cybersecurity challenges. Continued to provide updates to reflect emerging priorities and address Navy specific threats. Continued to coordinate cybersecurity activities across the virtual SYSCOM via the Cybersecurity Trusted Architecture (TA) to ensure the security design and integration of cybersecurity products and services is consistent across the Navy for major initiatives such as the future afloat, ashore, and Outside the Continental United States (OCONUS) networks. Continued to provide cybersecurity risk analysis and recommended risk mitigation strategies for Navy critical networks and C4I systems. Continued to coordinate with the Navy acquisition community to ensure cybersecurity requirements are identified and addressed within the development cycles for emerging Navy</p>	2.055	2.084	2.442	0.000	2.442
	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 0734 / <i>Communications Security R&D</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>network and C4I capabilities. Continued to evaluate products for security issues and develop guidance and procedures for the design and integration of risk mitigation strategies via appropriate cybersecurity controls.</p> <p>FY 2016 Plans: Continue to provide security systems engineering support for the development of DoD and DoN cybersecurity architectures and the transition of new technologies to address Navy cybersecurity challenges. Continue to provide updates to reflect emerging priorities and address Navy specific threats. Continue to coordinate cybersecurity activities across the virtual SYSCOM via the Cybersecurity TA to ensure the security design and integration of cybersecurity products and services is consistent across the Navy for major initiatives such as the future afloat, ashore, and OCONUS networks. Continue to provide cybersecurity risk analysis and recommended risk mitigation strategies for Navy critical networks and C4I systems. Continue to coordinate with the Navy acquisition community to ensure cybersecurity requirements are identified and addressed within the development cycles for emerging Navy network and C4I capabilities. Continue to evaluate products for security issues and develop guidance and procedures for the design and integration of risk mitigation strategies via appropriate cybersecurity controls.</p> <p>FY 2017 Base Plans: Begin coordination with Joint Information Environment (JIE) and Joint Management System (JMS) to ensure Navy architecture requirements for tactical networks are met. Continue to provide security systems engineering support for the development of DoD and DoN cybersecurity architectures and the transition of new technologies to address Navy cybersecurity challenges. Continue to provide updates to reflect emerging priorities and address Navy specific threats. Continue to coordinate cybersecurity activities across the virtual SYSCOM via the Cybersecurity TA to ensure the security design and integration of cybersecurity products and services is consistent across the Navy for major initiatives such as the future afloat, ashore, and OCONUS networks. Continue to provide cybersecurity risk analysis and recommended risk mitigation strategies for Navy critical networks and C4I systems. Continue to coordinate with the Navy acquisition community to ensure cybersecurity requirements are identified and addressed within the development cycles for emerging Navy network and C4I capabilities. Continue to evaluate products for security issues and develop guidance and procedures for the design and integration of risk mitigation strategies via appropriate cybersecurity controls.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	18.773	25.953	36.987	0.000	36.987

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPN/3415: <i>Info Sys Security Program (ISSP)</i>	101.110	135.687	85.694	-	85.694	91.581	99.749	102.197	105.659	Continuing	Continuing

Remarks

D. Acquisition Strategy

Computer Network Defense (CND): The CND Acquisition Category (ACAT) IVT program is a layered protection strategy, using Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) hardware and software products that collectively provide an effective network security infrastructure. The rapid advance of cyber technology requires an efficient process for updating CND tools deployed to afloat and shore platforms. Recognizing the need for future CND capability improvements, CND implements an evolutionary acquisition strategy that delivers CND capabilities in multiple builds and functionality releases that address validated requirements.

Navy Cryptography (Crypto): Modernized crypto devices will replace legacy crypto in accordance with the Chairman of the Joint Chiefs of Staff (CJCS) mandate (CJCS Instruction 6510) as well as the National Security Agency (NSA) planned decertification, which improves the Navy's cyber defense posture. Strategies followed by other lead agencies include VINSON/Advanced Narrowband Digital Voice Terminal Crypto Modernization (VACM) and KG-3X which are led by the United States Air Force (USAF).

Key Management (KM): Key Management Infrastructure (KMI) is a NSA led Joint ACAT I program. It is the next generation Electronic Key Management System (EKMS) that provides the infrastructure for management, ordering and distribution of key material as well as directly supporting the key requirements of all Crypto modernization efforts. KMI will follow an increment/spiral development strategy. The KMI program will continue to develop alternative architecture implementations for communities within the Navy to implement Intermediary Application (iApp) as a key management solution.

Public Key Infrastructure (PKI): Department of Defense (DoD) PKI is an ACAT I program led by the NSA and the DoD Chief Information Officer (CIO) who are the Milestone Decision Authority (MDA). The Navy PKI project supports the DoD-wide implementation of PKI products and services across Navy afloat, non-Navy Marine Corps Intranet (NMCI), and Outside the Continental United States (OCONUS) networks.

E. Performance Metrics

Computer Network Defense (CND):

* Provide the ability to protect from, react to, and restore operations after an intrusion or other catastrophic event through validated contingency plans for 100% of CND systems.

* Develop dynamic security defense capabilities, based on the CND posture as an active response to threat attack sensors and vulnerability indications to provide adequate defenses against subversive acts of trusted people and systems, both internal and external, by integration of anomaly-based detection solutions into the design solutions for 100% of authorized Navy enclaves.

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<p>* Defend against the unauthorized use of a host or application, particularly operating systems, by development and/or integration of host-based intrusion prevention system design solutions for 100% of authorized Navy enclaves.</p> <p>* Continue to develop and provide cyber situational awareness to the Commander United States Tenth Fleet (C10F) Maritime Operations Center (MOC).</p> <p>Navy Cryptography (Crypto):</p> <p>* Meet 100% of Chairman of the Joint Chiefs of Staff Instruction (CJCSI 6510) Cryptographic Modernization (CM) requirements within the current Fiscal Year Defense Plan (FYDP) by conducting a gap analysis and building a CM roadmap and implementation plan to allow the Navy Network Warfare Command (NETWAR) FORCENet Enterprise to establish operational priorities based on risk assessments. The gap analysis is an effort to analyze current integrated legacy cryptographic devices within the Department of the Navy (DoN) inventory with known algorithm vulnerability dates, assess lifecycle sustainment issues, and identify transition device schedules, where they exist.</p> <p>* Meet 100% of Top Secret (TS) and SECRET CJCSI 6510 by fielding modern cryptographic devices or request "key extension" via the Joint Staff Military Command, Control, Communications, and Computers Executive Board (MC4EB).</p> <p>* Increase the functionality of cryptographic devices by replacing 2 legacy cryptographic devices with 1 modern device, where possible, identify, and implement modern small form factor, multi-channel cryptography devices (e.g., KIV-7M replacing KIV-7HS, KIV-7HSB, KG-84, KWR-46, KL-51, etc.).</p> <p>Key Management (KM):</p> <p>* Meet 100% of DON, US Coast Guard (USCG) key management requirements. USCG and Military Sealift Command (MSC) replace existing Electronic Key Management System (EKMS) Tier 2 systems with a Key Management Infrastructure (KMI) Intermediary Application (iApp). Littoral Combat Ship (LCS) implements iApp to automate key deliver to the platforms.</p> <p>* Complete iApp engineering efforts, testing, integration with KMI Capability Increment (CI)-2, and begin transition to LCS, USCG Cutters and MSC in FY17.</p> <p>* Incorporate 100% of the Communication Security (COMSEC) Manager Workstation (CMWS) requirements into the iApp baseline to meet KMI CI-2 and KMI CI-3 capabilities.</p> <p>* Refine and provide Navy unique requirements into the National Security Agency (NSA) KMI CI-3 Capability Development Document (CDD).</p> <p>Public Key Infrastructure (PKI):</p> <p>* Provide integration support to ensure Navy networks and Programs of Record (POR) comply with Department of Defense (DoD) PKI requirements on Non-Classified Internet Protocol Router Network (NIPRNet) and SECRET Internet Protocol Router Network (SIPRNet), per Department of Defense Instruction (DoDI) 8520.02.</p> <p>* Ensure 100% interoperability with DoD and Federal partners by researching and evaluating enhanced cryptographic algorithms and DoD certificate changes.</p> <p>Cybersecurity Services:</p> <p>* Ensure 100% interoperability and application of commercial standards compliance for Information Systems Security Program (ISSP) products by researching and conducting selective evaluations, integrating and testing commercial-off-the-shelf/Non-Developmental Item cybersecurity products. Evaluation may include defensible network boundary capabilities such as firewalls, secure routers and switches, guards, Virtual Private Networks (VPN), and network Intrusion Prevention Systems (IPS).</p> <p>* Provide 100% of the services delineated in OPNAVINST 5239.1C by serving as the Navy's cybersecurity technical lead by developing cybersecurity risk analysis and recommended risk mitigation strategies for critical Navy networks and Command, Control, Communications, Computers, and Intelligence (C4I) systems.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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<p>* Coordinate cybersecurity activities across the Navy Enterprise via the Cybersecurity Trusted Architecture (TA) to measure effectiveness of Navy networks. Ensure the security design and integration of Computer Adaptive Network Defense-in-Depth (CANDiD) products and services and that they are 100% interoperable and operationally acceptable across the Navy for major initiatives such as the future afloat, ashore, and Outside the Continental United States (OCONUS) networks.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / Information Sys Security Program	Project (Number/Name) 0734 / Communications Security R&D
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	Various	Various : Various	185.039	0.218	Dec 2014	0.268	Dec 2015	0.710	Dec 2016	-		0.710	Continuing	Continuing	Continuing
Hardware Development (WR)	WR	SSC LANT : Charleston, SC	3.921	0.684	Oct 2014	0.780	Oct 2015	0.862	Oct 2016	-		0.862	Continuing	Continuing	Continuing
Hardware Development (WR)	WR	SSC PAC : San Diego, CA	7.017	1.958	Oct 2014	2.235	Oct 2015	1.986	Oct 2016	-		1.986	Continuing	Continuing	Continuing
Hardware Development	C/CPFF	SSC LANT : Charleston, SC	0.479	0.576	Dec 2014	0.658	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Development	C/CPFF	SSC PAC : San Diego, CA	1.170	1.084	Dec 2014	1.237	Dec 2015	1.045	Dec 2016	-		1.045	Continuing	Continuing	Continuing
Software Development	Various	Various : Various	66.200	0.000		2.265	Dec 2015	2.085	Dec 2016	-		2.085	Continuing	Continuing	Continuing
Software Development (WR)	WR	SSC LANT : Charleston, SC	1.530	2.020	Oct 2014	2.127	Oct 2015	1.671	Oct 2016	-		1.671	Continuing	Continuing	Continuing
Software Development (WR)	WR	SSC PAC : San Diego, CA	8.030	4.019	Oct 2014	5.961	Oct 2015	6.412	Oct 2016	-		6.412	Continuing	Continuing	Continuing
Software Development	C/CPFF	SSC LANT : Charleston, SC	1.313	1.789	Dec 2014	1.884	Dec 2015	3.891	Dec 2016	-		3.891	Continuing	Continuing	Continuing
Software Development	C/CPFF	SSC PAC : San Diego, CA	1.353	1.942	Dec 2014	3.794	Dec 2015	3.792	Dec 2016	-		3.792	Continuing	Continuing	Continuing
Software Development	MIPR	Defense Technical Information Center : Fort Belvoir, VA	0.839	0.603	Dec 2014	0.000		0.000		-		0.000	0.000	1.442	-
Software Development	MIPR	MITRE : McLean, VA	0.000	0.000		0.000		1.372	Dec 2016	-		1.372	Continuing	Continuing	Continuing
Subtotal			276.891	14.893		21.209		23.826		-		23.826	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Architecture	Various	Various : Various	4.467	0.460	Dec 2014	0.484	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Architecture	WR	SSC LANT : Charleston, SC	0.440	0.806	Oct 2014	0.849	Oct 2015	0.413	Oct 2016	-		0.413	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0303140N / Information Sys Security Program					Project (Number/Name) 0734 / Communications Security R&D						
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Architecture	WR	SSC PAC : San Diego, CA	0.210	0.220	Oct 2014	0.232	Oct 2015	0.923	Oct 2016	-		0.923	Continuing	Continuing	Continuing
Requirements Analysis	C/CPFF	BAH : San Diego, CA	5.274	0.220	Dec 2014	0.891	Dec 2015	3.704	Dec 2016	-		3.704	Continuing	Continuing	Continuing
Studies & Design	Various	Various : Various	4.050	0.359	Dec 2014	0.377	Dec 2015	0.224	Dec 2016	-		0.224	Continuing	Continuing	Continuing
Studies & Design	WR	NRL : Washington, DC	0.750	0.750	Dec 2014	0.790	Dec 2015	1.172	Dec 2016	-		1.172	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	3.044	0.000		0.000		0.000		-		0.000	0.000	3.044	-
Architecture	MIPR	MITRE : McLean, VA	0.000	0.000		0.000		0.363	Dec 2016	-		0.363	Continuing	Continuing	Continuing
Requirements Analysis	MIPR	MITRE : McLean, VA	0.000	0.000		0.000		0.363	Dec 2016	-		0.363	Continuing	Continuing	Continuing
Requirements Analysis	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.688	Oct 2016	-		0.688	Continuing	Continuing	Continuing
Studies & Design	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.688	Oct 2016	-		0.688	Continuing	Continuing	Continuing
Studies & Design	MIPR	MITRE : McLean, VA	0.000	0.000		0.000		0.363	Dec 2016	-		0.363	Continuing	Continuing	Continuing
Subtotal			18.235	2.815		3.623		8.901		-		8.901	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System DT&E	Various	Various : Various	37.789	0.423	Dec 2014	0.445	Dec 2015	1.545	Dec 2016	-		1.545	Continuing	Continuing	Continuing
System DT&E	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.688	Oct 2016	-		0.688	Continuing	Continuing	Continuing
System DT&E	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.250	Oct 2016	-		0.250	Continuing	Continuing	Continuing
Subtotal			37.789	0.423		0.445		2.483		-		2.483	-	-	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 0734 / <i>Communications Security R&D</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0734				
CND - Build 3 Dev, Integ, & Test	3	2015	3	2015
CND - Build 4 Dev, Integ, & Test	2	2016	2	2016
CND - Build 5 Dev, Integ, & Test	4	2015	4	2016
CND - Build 6 Dev, Integ, & Test	2	2016	2	2017
CND - Build 7 Dev, Integ, & Test	4	2016	4	2017
CND - Build 8 Dev, Integ, & Test	2	2017	2	2018
CND - Build 9 Dev, Integ, & Test	4	2017	4	2018
CND - Build 10 Dev, Integ, & Test	2	2018	2	2019
CND - Build 11 Dev, Integ, & Test	4	2018	4	2019
CND - Build 12 Dev, Integ, & Test	2	2019	2	2020
CND - Build 13 Dev, Integ, & Test	4	2019	4	2020
CND - Build 14 Dev, Integ, & Test	2	2020	2	2021
CND - Build 15 Dev, Integ, & Test	4	2020	4	2021
CND - Inc 2 Deliveries	1	2015	4	2020
Crypto - VACM Full Rate Production (FRP) Decision	2	2016	2	2016
Crypto - VACM Initial Operational Capability (IOC)	4	2016	4	2016
Crypto - VACM Initial Operational Test & Evaluation (IOT&E)	1	2015	2	2015
Crypto - TRANSEC Studies & Analysis	1	2015	4	2016
Crypto - TRANSEC Development and Product Testing	3	2016	4	2019
Crypto - ACC Solutions Development and Product Testing	1	2015	4	2019
Crypto - Link 22 (L22) Full Development Article Delivery	4	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 0734 / <i>Communications Security R&D</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Crypto - L22 Test Readiness Review (TRR) 2	2	2015	2	2015
Crypto - L22 Production Readiness Review (PRR)	4	2015	4	2015
Crypto - Next Generation Crypto Development	1	2018	4	2021
Key Management - KMI CI-2 Spiral 2 Spin 1 Fielding Decision (FD)	3	2015	3	2015
Key Management - FD Spiral 2 Spin 2	4	2016	4	2016
Key Management - FD Spiral 2 Spin 3	3	2017	3	2017
Key Management - FD Spiral 2 Spin 4	3	2017	3	2017
Key Management - KMI CI-2 Spiral 2 Full Operational Capability (FOC)	1	2018	1	2018
Key Management - KMI CI-2 Spiral 2 Spin 1-4 Development	1	2015	1	2017
Key Management - KMI CI-3 Spiral 3/Tech Refresh Spin 1-3 Development	3	2017	4	2021
Key Management - KMI Intermediary Application (iAPP) Development and Product Testing	1	2015	4	2021
Key Management - Development Testing (DT) CI-2 Spiral 2 Spin 2	2	2016	2	2016
Key Management - Operational Assessment (OA) CI-2 Spiral 2 Spin 2	2	2016	2	2016
Key Management - DT CI-2 Spiral 2 Spin 3	4	2016	4	2016
Key Management - OA CI-2 Spiral 2 Spin 3	1	2017	1	2017
Key Management - DT CI-2 Spiral 2 Spin 4	2	2017	2	2017
Key Management - OA CI-2 Spiral 2 Spin 4	2	2017	2	2017
Key Management - Spiral 2 Full Operational Test & Evaluation (FOT&E)	4	2017	4	2017
Key Management - Spiral 2 Full Deployment Decision (FDD)	4	2017	4	2017
Key Management - KMI CI-3 Spiral 3 Contract Award	2	2019	2	2019
Key Management - DT CI-3 Spiral 3	2	2019	2	2019
Key Management - OA CI-3 Spiral 3	3	2019	3	2019
Key Management - KMI CI-3 Spiral 3 Fielding Decision (FD)	4	2019	4	2019
Key Management - FD Spiral 3 Spin 1	3	2020	3	2020
Key Management - FD Spiral 3 Spin 2	2	2021	2	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 0734 / <i>Communications Security R&D</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Key Management - DT CI-3 Spiral 3 Spin 1	1	2020	1	2020
Key Management - Operational Assessment (OA) CI-3 Spiral 3 Spin 1	2	2020	2	2020
Key Management - Development Testing (DT) CI-3 Spiral 3 Spin 2	4	2020	4	2020
Key Management - OA CI-3 Spiral 3 Spin 2	1	2021	1	2021
Cybersecurity - Systems Engineering & Development of Cybersecurity Services	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>				Project (Number/Name) 3230 / <i>Information Assurance</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3230: <i>Information Assurance</i>	10.494	3.882	2.128	1.523	-	1.523	2.399	2.373	2.217	2.264	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goal of the Information Assurance (IA) program is to ensure the continued protection of Navy and joint information and information systems from hostile exploitation and attack. ISSP activities address the triad of Defense Information Operations: protection, detection, and reaction. Evolving attack sensing (detection), warning, and response (reaction) responsibilities extend far beyond the traditional ISSP role in protection or Information Systems Security (INFOSEC). Focused on the highly mobile forward deployed subscriber, the Navy's adoption of Network-Centric Warfare (NCW) places demands upon the ISSP, as the number of users expands significantly and the criticality of their use escalates. Today, the ISSP protects an expanding core of services critical to the effective performance of the Navy's mission.

The rapid rate of change in the underlying commercial and government information infrastructures makes the provision of security an increasingly complex and dynamic problem. IA technology mix and deployment strategies must evolve quickly to meet rapidly evolving threats and vulnerabilities. No longer can information security be divorced from the information infrastructure. The ISSP enables the Navy's war fighter to trust in the availability, integrity, authentication, privacy, and non-repudiation of information.

This project includes funds for advanced technology development, test and evaluation of naval information systems security based on leading edge technologies that will improve information assurance (e.g., situational awareness and information infrastructure protection) across all command echelons to tactical units afloat and war fighters ashore. This effort will provide the research to develop a secure seamless interoperable, common operational environment of networked information systems in the battle space and for monitoring and protecting the information infrastructure from malicious activities. This effort will provide naval forces a secure capability and basis in its achievement of protection from unauthorized access and misuse, and optimized IA resource allocations in the information battle space. This program will also develop core technology to: (1) improve network infrastructure resistance and resiliency to attacks; (2) enable the rapid development and certification of security-aware applications and information technologies in accordance with the Common Criteria for IA and IA-enabled information technology products by the National Security Telecommunications and Information Systems Security Instructions; and (3) measure the effectiveness and efficiency of IA defensive capabilities under naval environments.

The program will develop common architectural frameworks that facilitate integration of network security capabilities, enable effective seamless interoperability, and contribute to a common consistent picture of the networked environment with respect to information assurance and security. This effort will address the need for a common operational picture for IA, as well as assessment of security technology critical to the success of the mission. This effort will also initiate requirements definition for situational awareness capabilities to support computer network defense in a highly-distributed, homogeneous, and heterogeneous networks including mobile and embedded networked devices. This effort also includes the architectural definition of situational awareness and visualization capabilities to support active computer network defense and support underlying data mining and correlation tools. This includes addressing the capability to remotely manage and securely control the configurations of network security components to implement changes in real time or near real time. Program will also initiate requirements definition for secure coalition data exchange and interoperability among security levels and classifications, and ensure approaches address various security level technologies as well as emerging

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 3230 / <i>Information Assurance</i>
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architectural methods of providing interoperability across different security levels. Examine multi-level aware applications and technologies including databases, web browsers, routers/switches, etc. Efforts will also initiate infrastructure protection efforts as the Navy develops network centric architectures and warfare concepts, ensuring an evolutionary development of security architectures and products for IA that addresses Navy infrastructure requirements. IA will ensure the architectures evolve to provide proper protection as technology, DoD missions, and threats continuously evolve. IA includes defensive protections as well as intrusion monitoring (sensors), warning mechanisms, and response capabilities in the architecture. Ensure the unique security and performance requirements of tactical systems, including those operating various security levels are addressed. Also, the program will initiate the efforts to conceptualize new network centric warfare technology to protect our assets, such as secure network gateways, routers, components and tools that improve the survivability of Navy networks. Last, IA will provide systems security engineering, certification and accreditation support for high-confidence naval information systems and ensure certification and accreditation approaches are consistent with Navy and DoD requirements.

FY17 : Continue development of new network security demands addressing nation-state level sponsored activity.
 Incorporate security services to thwart Denial of Network Service (DNS) attacks, distributed denial of service, botnet and other sophisticated attacks.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Information Assurance (IA)	3.882	2.128	1.523	0.000	1.523
Articles:	-	-	-	-	-
FY 2015 Accomplishments: Continued the development of a security framework for mobile communication devices. The framework emphasized addressing the security issues associated with bring-your-own-device/bring-your-own-application (BYOD/BYOA), such as to support the integration of Droid and/or iPhone devices. Completed at a reduced level of effort the development of new network security technology focused on addressing nation state level sponsored activity. Completed at a reduced level of effort the development of enabling technology building blocks for identity management and secure data storage, processing and exchange. Completed the Weaselboard Project used to study and assess vulnerabilities with Shipboard Supervisory Control and Data Acquisition (SCADA) information that conducts an operational demonstration on a Naval platform.					
FY 2016 Plans: Continue the development of new sensing and instrumentation technology to measure the effectiveness of network security technology.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 3230 / <i>Information Assurance</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue the development of technology to provide prediction/early warning sensing of impending attacks based on network traffic and user behavior.					
Continue the development of critical cryptographic technology to support Navy unique platforms and requirements such as UASs (e.g., UAVs, UUV) ensuring the technology addresses the limited size, weight and power issues, and multiple data classification processing requirements, while as providing on-the-fly programmability of mission data and key material to support various missions such as COMSEC, ELINT, SIGINT, etc.					
Continue systems security engineering, certification and accreditation support for high-confidence naval information systems and ensure certification and accreditation approaches are consistent with Navy and DoD requirements.					
Complete the development of new network security technology focused on addressing nation state level sponsored activity. Enhance the security framework for federated infrastructures to support newly developed cross-domain services/devices.					
Complete the development of a security framework for mobile communication devices. Emphasize addressing the security issues associated with bring-your-own-device/bring-your-own-application (BYOD/BYOA), such as to support the integration of phone and tablet devices.					
Initiate the development of new host-based security technology focused on addressing data-at-rest requirements, protection of the operating system and applications from nation state-sponsored activities, and methods for system and software updates that do not invalidate the security framework of the host workstation.					
<i>FY 2017 Base Plans:</i>					
Continue the development of new host-based security technology focused on addressing data-at-rest requirements, protection of the operating system and applications from nation state-sponsored activities, and methods for system and software updates that do not invalidate the security framework of the host workstation.					
Continue the development of technology to provide prediction/early warning sensing of impending attacks based on network traffic and user behavior. Provide initial response options/actions based on sensing predictions.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 3230 / <i>Information Assurance</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue the development of critical cryptographic technology to support Navy unique platforms and requirements such as UASs (e.g., UAVs, UUV) ensuring the technology addresses the limited size, weight and power issues, and multiple data classification processing requirements, while as providing on-the-fly programmability of mission data and key material to support various missions such as COMSEC, ELINT, SIGINT, etc. Adapt the solution for other candidate platforms in support of mission requirements.					
Continue systems security engineering, certification and accreditation support for high-confidence naval information systems and ensure certification and accreditation approaches are consistent with Navy and DoD requirements.					
Complete the development of new sensing and instrumentation technology to measure the effectiveness/provide metrics of network security technology against nation state adversaries.					
Initiate the development of a new techniques/technology for discovering adversarial presence in Navy/DoD networks, especially for advanced persistent threats (APT) within the network infrastructure and components/workstations. Efforts will focus on detection, isolation and remediation.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	3.882	2.128	1.523	0.000	1.523

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy N/A
E. Performance Metrics Protection of Navy and joint information from hostile exploitation and attack.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0303140N / <i>Information Sys Security Program</i>	Project (Number/Name) 3230 / <i>Information Assurance</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3230				
Development	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305160N / <i>Navy Meteorological and Ocean Sensors-Space(METOC)</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	2.284	0.356	0.599	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.239
0524: <i>Navy METOC Support (SPACE)</i>	2.284	0.356	0.599	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.239

A. Mission Description and Budget Item Justification

This program element supports the Navy's requirements in meteorological and oceanographic (METOC) space-based remote sensors. These requirements include commitments to satellite, sensor, and operational demonstration/development activities as well as the transition to fleet applications associated with the joint Defense Meteorological Satellite Program (DMSP).

The Navy METOC Space-Based Sensing Capabilities project provides for Navy participation in Navy/Air Force cooperative efforts leading to DMSP sensor development, and specifically participation in the calibration and validation of instruments and delivery of satellite products to the fleet. The passive microwave instruments carried on the DMSP satellites provide global and atmospheric data of direct operational relevance, including sea surface wind, sea ice, and precipitation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.359	0.599	60.679	-	60.679
Current President's Budget	0.356	0.599	0.000	-	0.000
Total Adjustments	-0.003	0.000	-60.679	-	-60.679
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.003	0.000			
• Program Adjustments	0.000	0.000	-60.679	-	-60.679

Change Summary Explanation

The FY 2017 funding request in the amount of \$60.009 million for the Navy's Geodetic/geophysical Satellite (GEOSAT) Follow-On 2 (GFO-2) was eliminated.

The FY 2017 funding request of \$.67 million is realigned to Program Element 0603207N, Project 2342.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305160N / Navy Meteorological and Ocean Sensors-Space(METOC)				Project (Number/Name) 0524 / Navy METOC Support (SPACE)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0524: Navy METOC Support (SPACE)	2.284	0.356	0.599	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.239
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Meteorology and Oceanography (METOC) Space-Based Sensing Capabilities project provides for Navy participation in the Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager and Special Sensor Microwave Imager Sounder calibration/validation efforts in support of the fleet operational requirements. The passive microwave instrument carried on DMSP provides global oceanic and atmospheric data of direct operational relevance, including sea surface wind speed, sea ice, and precipitation.

The METOC Space-Based Sensing Capabilities project ensures the naval service's operational requirements are satisfied primarily through demonstration of technologies for inclusion on operational constellations such as DMSP, the Joint Polar Satellite System (JPSS) and the National Oceanic and Atmospheric Administration's Geostationary Operational Environmental Satellites (GOES). These efforts fulfill naval service unique requirements that are not funded within the DMSP, JPSS or GOES programs, and are in accordance with current inter-agency agreements.

Beginning in FY 2017 funding was realigned to Program Element 0603207N, Project 2342.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: METOC Space-Based Sensing Capabilities	0.356	0.599	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Performed assessment of planned national earth observing satellite system's sensor data Sentinel 3a and 3b launch for use in Navy Atmospheric and Oceanographic Prediction Models.					
FY 2016 Plans:					
Continue performance assessment on National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP) and Defense Meteorological Satellite Program (DMSP) satellite sensor suites. Continue assessment of planned environmental satellite sensor launches such as Geostationary Operational Environmental Satellite R-Series (GOES-R) and Global Change Observation Mission (GCOM) W-2 scheduled in FY16.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305160N / Navy Meteorological and Ocean Sensors-Space(METOC)	Project (Number/Name) 0524 / Navy METOC Support (SPACE)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Funding was realigned to PE 0603207N, project 2342.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.356	0.599	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• RDTEN/0603207N/2342: METOC DATA ASSIMILATION AND MOD	4.891	8.168	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy
 Naval service unique, space based Meteorology and Oceanography (METOC) requirements. Particular sensors or data sources with unique naval service mission needs are targeted to accelerate acquisition or ensure threshold accomplishment of Joint or converged national program plans. The Joint Polar Satellite System (JPSS) program will collect global microwave radiometry and sounding data to produce microwave imagery and other meteorological and oceanographic data. Conical Microwave Imager Sounder (CMIS) can be viewed as the follow-on instrument to the Special Sensor Microwave (SSM) instruments Navy developed for the Defense Meteorological Satellite Program. These CMIS sensors will be acquired as part of the JPSS architecture which supports these Navy requirements in the future. Maintenance of rigorous sensor calibration and data validation for operational SSM instruments continues along with algorithm development in support of fleet applications. The Advanced Altimeter technologies will improve radar altimeter resolution and aerial coverage to support Navy requirements for sea surface topography measurement in the littorals.

E. Performance Metrics
 Goal: Provide precise and near real-time METOC forecasting to the warfighter using existing and future space-based satellite derived data, including ocean surface wind speed, rain rate, ice concentration, and soil moisture measurements.
 Metric: Provide precise ocean surface wind speed within plus or minus 2.0 meters per second, the rain over land and ocean rate within plus or minus 5.0 millimeters per hour, soil moisture measurements within plus or minus 10%; and sea ice concentrations within plus or minus 10%.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305160N / Navy Meteorological and Ocean Sensors-Space(METOC)	Project (Number/Name) 0524 / Navy METOC Support (SPACE)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	WR	Naval Research Laboratory : Monterey, CA	1.873	0.352	Nov 2014	0.587	Nov 2015	0.000		-		0.000	0.000	2.812	-
Subtotal			1.873	0.352		0.587		0.000		-		0.000	0.000	2.812	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support	WR	SSC Pacific : San Diego, CA	0.330	0.000		0.000		0.000		-		0.000	0.000	0.330	-
Subtotal			0.330	0.000		0.000		0.000		-		0.000	0.000	0.330	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Acquisition Management	C/CPFF	PSS/BAH : San Diego, CA	0.081	0.004	Jun 2015	0.012	Dec 2015	0.000		-		0.000	0.000	0.097	-
Subtotal			0.081	0.004		0.012		0.000		-		0.000	0.000	0.097	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2.284	0.356	0.599	0.000	-	0.000	0.000	3.239	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305160N / Navy Meteorological and Ocean Sensors-Space(METOC)	Project (Number/Name) 0524 / Navy METOC Support (SPACE)

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Proj 0524	
Navy METOC (SPACE): Schedule Detail	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305160N / Navy Meteorological and Ocean Sensors-Space(METOC)	Project (Number/Name) 0524 / Navy METOC Support (SPACE)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0524				
Navy METOC (SPACE): Schedule Detail	1	2015	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305192N I JT Military Intel Programs
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	6.166	6.207	6.019	-	6.019	6.352	6.491	6.627	6.760	Continuing	Continuing
2246: <i>Intelligence Support to the Common Operational Picture</i>	0.000	0.000	0.000	3.430	-	3.430	3.651	3.734	3.807	3.883	Continuing	Continuing
2295: <i>JDISS/LOCE Integration</i>	0.000	6.166	6.207	2.589	-	2.589	2.701	2.757	2.820	2.877	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details of this program element are classified CONFIDENTIAL and are submitted annually to Congress in the classified budget justification books.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	6.166	6.207	6.270	-	6.270
Current President's Budget	6.166	6.207	6.019	-	6.019
Total Adjustments	0.000	0.000	-0.251	-	-0.251
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.251	-	-0.251

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305192N / JT Military Intel Programs				Project (Number/Name) 2246 / Intelligence Support to the Common Operational Picture			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2246: <i>Intelligence Support to the Common Operational Picture</i>	0.000	0.000	0.000	3.430	-	3.430	3.651	3.734	3.807	3.883	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified CONFIDENTIAL and are submitted annually to Congress in the classified budget justification books.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305192N / JT Military Intel Programs				Project (Number/Name) 2295 / JDISS/LOCE Integration			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2295: JDISS/LOCE Integration	0.000	6.166	6.207	2.589	-	2.589	2.701	2.757	2.820	2.877	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified CONFIDENTIAL and are submitted annually to Congress in the classified budget justification books.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	189.266	8.505	8.550	8.436	-	8.436	8.897	9.085	9.277	9.464	Continuing	Continuing
2478: <i>Tactical Control System</i>	189.266	8.505	8.550	8.436	-	8.436	8.897	9.085	9.277	9.464	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Control System (TCS), a component of the MQ-8 System, is a Joint Military Intelligence Program.

This TCS Program Element (PE) provides for the joint tactical MQ-8 Fire Scout System. TCS, integrated into the MQ-8 Mission Control System, provides the warfighters with the capability for day/night aerial intelligence, surveillance and reconnaissance, target acquisition, voice, data and command and control communications/relay, and mine detection and localization. Additionally, TCS provides a multi-level, scalable, and flexible operator control of the air vehicles and payloads, as well as direct receipt and dissemination of unmanned aerial vehicle sensor data.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.505	8.550	8.797	-	8.797
Current President's Budget	8.505	8.550	8.436	-	8.436
Total Adjustments	0.000	0.000	-0.361	-	-0.361
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.361	-	-0.361

Change Summary Explanation

Decrease in Tactical Unmanned Aer Vehicles by \$0.356M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Schedule:

Updated TCS schedule to coincide with MQ-8 Fire Scout schedule milestones.

MQ-8 related milestones

Revised milestone terminology: Updated Milestone C decision and reviews to align with planning for the restructured MQ-8 Fire Scout program.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	
Technical: None		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2478: <i>Tactical Control System</i>	189.266	8.505	8.550	8.436	-	8.436	8.897	9.085	9.277	9.464	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The TCS program supports the MQ-8 Fire Scout System and is a standards-based system, which provides interoperability and commonality for Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interfaces of Unmanned Aircraft Systems (UAS). TCS software, operating on Mission Control System (also referred to as a Ground Control Station) hardware, utilizes North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAG)-4586 architecture to communicate across a Tactical Common Data Link.

TCS provides a full range of scalable UAS capabilities from passive receipt of air vehicle and payload data to full air vehicle and payload command and control. TCS offers the warfighter a common core operating environment to simultaneously receive, process, and disseminate data from different UAS types for intelligence, reconnaissance, surveillance, and combat assessment.

This program supports enhancements and updates to TCS in order to continue to meet supported air vehicle enhancements, incorporation of new technologies that will be used to enhance overall system performance, incorporate new payloads and payload capabilities (such as advanced sensors and weapons), incorporate multi-vehicle control, incorporate NATO STANAG-4586 and Command, Control, Communications, Computers and Intelligence enhancements, and alignment with OSD direction for UAS control segments.

TCS software is incorporated into the MQ-8 Fire Scout System and fields in conjunction with MQ-8. TCS software addresses MQ-8 requirements validated by the Joint Requirements Oversight Council in the MQ-8 Capability Production Document (May 2007) and multiple Joint Emergent Operational Need/Urgent Operational Needs statements. TCS is supported by an Operational Requirements Document (Feb 2000).

TCS maximizes the use of contractor and government off-the-shelf hardware and software whenever possible and incorporates software/hardware enhancements where appropriate to maintain growth potential and minimize hardware and operating system dependence. TCS software is interoperable and is compliant with the OSD Command and Control, Communications, Intelligence Joint Technical Architecture, Distributed Common Ground System standards, Global Command and Control System, and NATO standards. TCS hardware and software upgrades support the Navy's Common Control System migration.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: TCS Development and Integration	7.846	7.882	7.752	0.000	7.752
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016				
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
Continued TCS integration and test with MQ-8 development. Continued new TCS capabilities to support requirements for Littoral Combat Ship efforts. Continued TCS Standardization Agreements (STANAG)-4586 compliance. Continued Tactical Control System (TCS) C4ISR interface integration and testing for MQ-8 systems. Continued hardware and operating system independence initiatives. Continued Radar and payload integration, MQ-8C Integration, and continued preparations for Common Control System integration and demonstrations. Continued TCS Version 5 Linux transition, TCS Version 6 technology refresh, and initiated move to TCS Version 7 service oriented architecture.						
FY 2016 Plans: Continue TCS integration and test with MQ-8 development. Continue new TCS capabilities to support requirements for Littoral Combat Ship (LCS) efforts. Continue TCS STANAG 4586 compliance. Continue TCS C4ISR interface integration and testing for MQ-8 systems. Continue hardware and operating system independence initiatives. Continue Radar and payload integration, MQ-8C integration, and continue preparations for Common Control System integration and demonstrations. Complete TCS Version 5 Linux transition, continue TCS Version 6 technology refresh, and continue TCS Version 7 service oriented architecture.						
FY 2017 Base Plans: Continue TCS integration and test with MQ-8 development. Continue new TCS capabilities to support requirements for LCS efforts. Continue TCS STANAG 4586 compliance. Continue TCS C4ISR interface integration and testing for MQ-8 systems. Continue hardware and operating system independence initiatives. Continue Radar and payload integration, MQ-8C integration, and continue preparations for Common Control System integration and demonstrations. Continue TCS Version 6 technology refresh, and continue TCS Version 7 service oriented common architecture.						
FY 2017 OCO Plans: N/A						
Title: Technical and Engineering Services						
Articles:						
	0.659	0.668	0.684	0.000	0.684	
	-	-	-	-	-	
FY 2015 Accomplishments: Continued government engineering support, contractor support, program support, and travel for the TCS program.						
FY 2016 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue government engineering support, contractor support, program support, and travel for the TCS program. FY 2017 Base Plans: Continue government engineering support, contractor support, program support, and travel for the TCS program. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	8.505	8.550	8.436	0.000	8.436

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Tactical Control System (TCS) program is government owned, non-proprietary software that currently supports the MQ-8 Fire Scout System. The TCS program continues to focus on Navy requirements and standards-based architecture/software to support interoperability. The government-owned TCS software development toolkit is available to all UAS developers and manufacturers that allows a low-cost integration into the open architecture non-proprietary TCS system. TCS provides software modules to the Navy Common Control System (CCS) and the TCS tech refresh hardware supports migration to CCS software.

E. Performance Metrics

Successfully complete Navy payloads integration, to include Coastal Battlefield Reconnaissance and Analysis (COBRA). Support MQ-8C Endurance Upgrade, Radar, and future capabilities. Successfully complete Littoral Combat Ship Integration. Complete Developmental and Operational Test.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Software Development 2	SS/CPPIF	Raytheon : Falls Church, VA	22.015	7.846	Nov 2014	7.882	Nov 2015	7.752	Nov 2016	-		7.752	39.610	85.105	85.105
Prior Year Cost no longer Funded in the FYDP	C/CPAF	Raytheon : Falls Church, VA	148.237	0.000		0.000		0.000		-		0.000	0.000	148.237	148.237
Subtotal			170.252	7.846		7.882		7.752		-		7.752	39.610	233.342	233.342

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Test and Evaluation	WR	Various : Various	1.273	0.023	Nov 2014	0.023	Nov 2015	0.025	Nov 2016	-		0.025	Continuing	Continuing	Continuing
Subtotal			1.273	0.023		0.023		0.025		-		0.025	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering Support	Various	Various : Various	3.296	0.190	Nov 2014	0.193	Nov 2015	0.197	Nov 2016	-		0.197	Continuing	Continuing	Continuing
Government Engineering Support	WR	Various : Various	9.686	0.226	Nov 2014	0.229	Nov 2015	0.236	Nov 2016	-		0.236	Continuing	Continuing	Continuing
Program Management Support	Various	Various : Various	4.436	0.197	Nov 2014	0.200	Nov 2015	0.203	Nov 2016	-		0.203	Continuing	Continuing	Continuing
Travel	WR	NAVAIR : Patuxent River, MD	0.323	0.023	Nov 2014	0.023	Nov 2015	0.023	Nov 2016	-		0.023	Continuing	Continuing	Continuing
Subtotal			17.741	0.636		0.645		0.659		-		0.659	-	-	-

Remarks
Travel Contract Type is TO.

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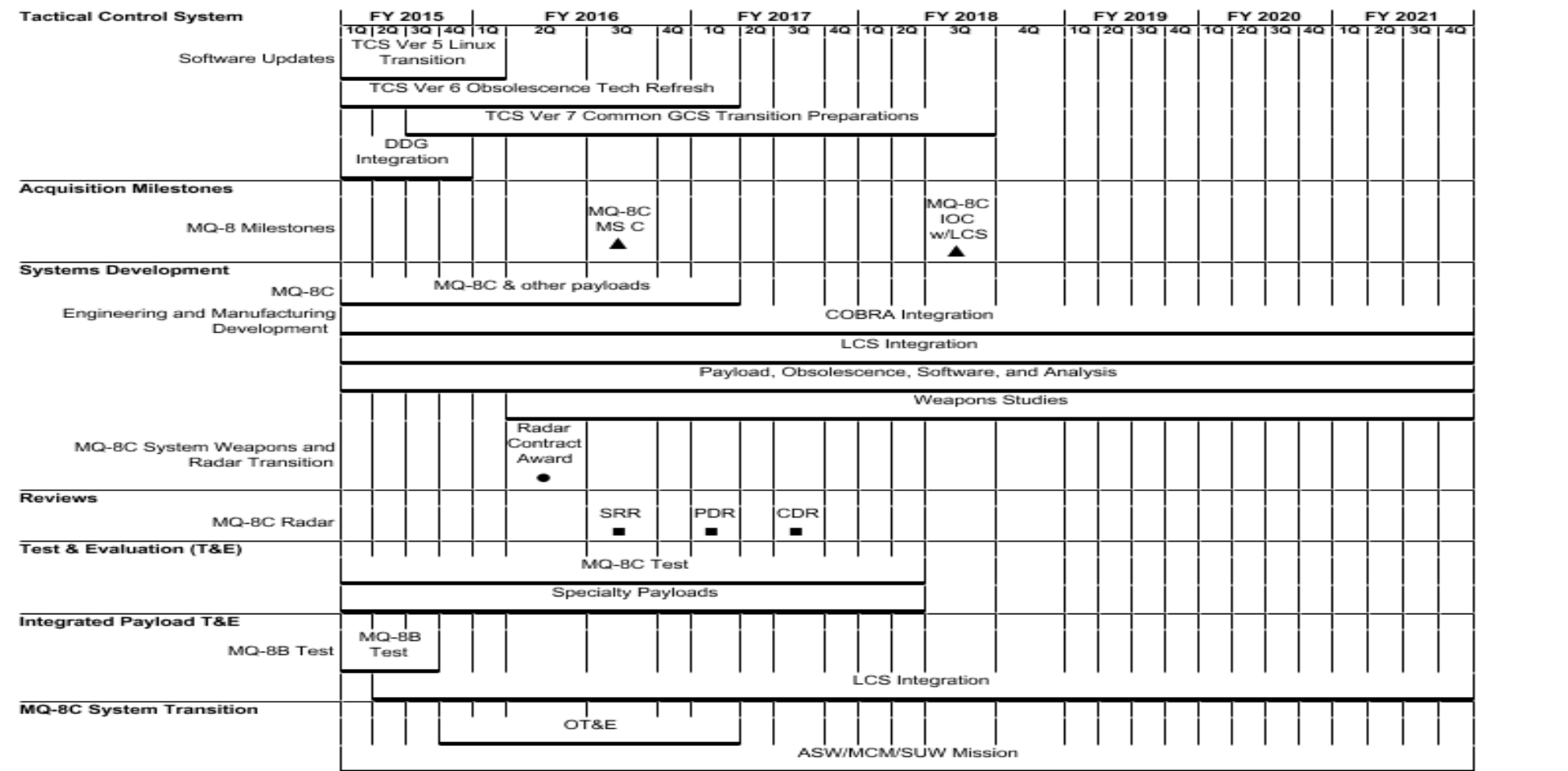
Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy								Date: February 2016					
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>				Project (Number/Name) 2478 / <i>Tactical Control System</i>					
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	189.266	8.505		8.550		8.436		-		8.436	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Tactical Control System</i>				
Software Updates: TCS Ver 5 Linux Transition	1	2015	1	2016
Software Updates: TCS Ver 6 Obsolescence Tech Refresh	1	2015	1	2017
Software Updates: TCS Ver 7 Common GCS Transition Preparations	3	2015	3	2018
Software Updates: DDG Integration	1	2015	4	2015
Acquisition Milestones: MQ-8 Milestones: MQ-8 Initial Operational Capability (IOC) MQ-8C Littoral Combat Ship (LCS)	3	2018	3	2018
Acquisition Milestones: MQ-8 Milestones: MQ-8C Milestone C	3	2016	3	2016
Systems Development: MQ-8C: MQ-8C and other payloads	1	2015	1	2017
Systems Development: Engineering and Manufacturing Development: Coastal Battlefield Reconnaissance and Analysis Integration (COBRA), BLK 1/2/3	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Littoral Combat Ship (LCS) Integration	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Payload, Obsolescence, Software, and Analysis	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Weapons Studies	2	2016	4	2021
Systems Development: MQ-8C System Weapons and Radar Transition: Radar Contract Award	2	2016	2	2016
Reviews: MQ-8C Radar: System Requirements Review (SRR)	3	2016	3	2016
Reviews: MQ-8C Radar: Preliminary Design Review (PDR)	1	2017	1	2017
Reviews: MQ-8C Radar: Critical Design Review (CDR)	3	2017	3	2017
Test & Evaluation (T&E): MQ-8C Development Test	1	2015	2	2018
Test & Evaluation (T&E): Specialty Payloads	1	2015	2	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305204N / <i>Tactical Unmanned Aer Vehicles</i>	Project (Number/Name) 2478 / <i>Tactical Control System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Integrated Payload T&E: MQ-8B Test: MQ-8B	1	2015	3	2015
Integrated Payload T&E: MQ-8B Test: Littoral Combat Ship (LCS) Integration	2	2015	4	2021
MQ-8C System Transition: Operational Test and Evaluation (OT&E)	4	2015	1	2017
MQ-8C System Transition: ASW/MCM/SUW Mission	1	2015	4	2021
MQ-8C System Transition: MQ-8C Radar Transition: Radar Developmental Test (DT)	4	2017	3	2018
MQ-8C System Transition: MQ-8C Radar Transition: Radar Operational Test (OT)	4	2018	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305205N I (U)UAS Integration and Interoperability							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	41.831	36.509	-	36.509	20.473	17.410	11.060	11.318	Continuing	Continuing
3379: <i>Common Control System</i>	0.000	0.000	41.831	36.509	-	36.509	20.473	17.410	11.060	11.318	Continuing	Continuing

Note

The Common Control System (CCS) was budgeted in PE 0604404N: Unman Carrier Launch A/B Surv & Strike (UCLASS) Sys prior to FY16. UCLASS restructured into Carrier Based Aerial Refueling System (CBARS) program, PE 0605414N, PU 3278 in January 2016 for FY17. CCS Increment I development began 3Q2013.

A. Mission Description and Budget Item Justification

This PE funds the Unmanned System (UxS) Common Control System (CCS). The primary mission of CCS is to provide common control across the Navy's UxS portfolio to add scalable and adaptable warfighting capability, implement robust cybersecurity attributes, leverage existing government owned products, eliminate redundant software development efforts, consolidate product support, encourage innovation, improve cost control, and enable rapid integration of UxS capabilities across all domains: Aviation, Surface, Sub-Surface, and Ground.

This program will define, develop and deliver CCS capability that enables the flexibility for Ground Control Systems (GCS) that could be ship, shore, airborne, or expeditionary based to operate multiple and dissimilar Naval (UxSs). CCS includes a common framework, user interface, and common components that will also be integrated and tested with legacy platform components. CCS is being developed with an open and modular business model with robust cybersecurity implementation and will be provided as Government Furnished Equipment (GFE) to UxS Contractors as required. The CCS acquisition approach is to provide increasing UxS capability through incremental development for UxS platforms as follows:

Increment I will provide unmanned vehicle control functionality for launch & recovery, maneuvering & stationing, situational awareness, and health & performance status with a common Vehicle Management (VM) capability using legacy platform Mission Management/Mission Planning (MM/MP) capabilities hosted on legacy platform hardware. UxS platforms for initial CCS transition include CBARS, Triton (MQ-4), and Fire Scout (MQ-8). Efforts will include exploring opportunities for other UxS platforms from across all domains to benefit from CCS invested developments.

Increment II will maintain and update, as necessary, the core VM baseline and add common MM/MP capabilities hosted on legacy platform hardware.

Increment III aligns Common Control software and hardware for the Naval UxS control segment.

CCS is a ship/shore/airborne/expeditionary based common control segment that provides VM and MM/MP capabilities for Naval Group 2 through 5 Unmanned Aerial Vehicles (UAVs) and other domain UxS's. The CCS will provide open software architecture, based on the OSD Unmanned Control Segment (UCS) architecture, that is agile and scalable to evolving Service requirements and is supportive of safety/airworthiness certification and cybersecurity certification and accreditation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305205N I (U)UAS <i>Integration and Interoperability</i>
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The CCS PU funds two Speed-to-the-Fleet capability initiatives in FY17: 1) Full Motion Video (FMV) for Geo-intelligence Unified Naval Streaming System (GUNSS) and 2) Moving Target Indicator (MTI) for Broad Area Maritime Surveillance - Demonstrator (BAMS-D).

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	41.831	40.847	-	40.847
Current President's Budget	0.000	41.831	36.509	-	36.509
Total Adjustments	0.000	0.000	-4.338	-	-4.338
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	1.710	-	1.710
• Rate/Misc Adjustments	0.000	0.000	-6.048	-	-6.048

Change Summary Explanation

Decrease in UAS Integration and Interoperability by \$1.523M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

The restructure of the UCLASS program in FY17 into Carrier Based Aerial Refueling System (CBARS) predicated the need for the change in the Common Control System (CCS) budget language and acquisition strategy. The new CCS strategy is realigned from increments based on platforms to a capabilities-based strategy.

R-2 & R-2A Mission Description: Increment I and II definitions explained in greater detail with regards to vehicle management, mission management, and mission planning.

Overall strategy change from Increments structured by Platform to Increments based on Capability Areas

CCS Increment strategy realigned to provide:

Increment 1: Vehicle Management (VM), formerly UAVC2

Increment 2: Mission Management(MM) and Mission Planning (MP)

Increment 3: Common Control Segment

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0305205N / *(U)UAS Integration and Interoperability*

R-4 Schedule and Schedule details changed to align with new strategy and new increment definitions.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability				Project (Number/Name) 3379 / Common Control System			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3379: <i>Common Control System</i>	0.000	0.000	41.831	36.509	-	36.509	20.473	17.410	11.060	11.318	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The Common Control System was budgeted in PE 0604404N: Unman Carrier Launch A/B Surv & Strike (UCLASS) Sys prior to FY16. The Common Control System (CCS) was budgeted in PE 0604404N: Unman Carrier Launch A/B Surv & Strike (UCLASS) Sys prior to FY16. UCLASS restructured into Carrier Based Aerial Refueling System (CBARS) program, PE 0605414N, PU 3278 in January 2016 for FY17.

A. Mission Description and Budget Item Justification

This PE funds the Unmanned System (UxS) Common Control System (CCS). The primary mission of CCS is to provide common control across the Navy's UxS portfolio to add scalable and adaptable warfighting capability, implement robust cybersecurity attributes, leverage existing government owned products, eliminate redundant software development efforts, consolidate product support, encourage innovation, improve cost control, and enable rapid integration of UxS capabilities across all domains: Aviation, Surface, Sub-Surface, and Ground.

This program will define, develop and deliver CCS capability that enables the flexibility for Ground Control Systems (GCS) that could be ship, shore, airborne, or expeditionary based to operate multiple and dissimilar Naval (UxSs). CCS includes a common framework, user interface, and common components that will also be integrated and tested with legacy platform components. CCS is being developed with an open and modular business model with robust cybersecurity implementation and will be provided as Government Furnished Equipment (GFE) to UxS Contractors as required. In alignment with the newly established Office of the Chief of Naval Operations Directorate for Unmanned Warfare Systems (OPNAV N99), the CCS acquisition approach is to provide increasing UxS capability through incremental development for UxS platforms as follows:

Increment I will provide unmanned vehicle control functionality for launch & recovery, maneuvering & stationing, situational awareness, and health & performance status with a common Vehicle Management (VM) capability using legacy platform Mission Management/Mission Planning (MM/MP) capabilities hosted on legacy platform hardware. UxS platforms for initial CCS transition include CBARS, Triton (MQ-4), and Fire Scout (MQ-8). Efforts will include exploring opportunities for other UxS platforms from across all domains to benefit from CCS invested developments.

Increment II will maintain and update, as necessary, the core VM baseline and add common MM/MP capabilities hosted on legacy platform hardware.

Increment III aligns Common Control software and hardware for the Naval UxS control segment.

CCS is a ship/shore/airborne/expeditionary based common control segment that provides VM and MM/MP capabilities for Naval Group 2 through 5 Unmanned Aerial Vehicles (UAVs) and other domain UxS's. The CCS will provide open software architecture, based on the OSD Unmanned Control Segment (UCS) architecture, that is agile and scalable to evolving Service requirements and is supportive of safety/airworthiness certification and cybersecurity certification and accreditation.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability	Project (Number/Name) 3379 / Common Control System

The CCS PU funds two Speed-to-the-Fleet capability initiatives in FY17: 1) Full Motion Video (FMV) for Geo-intelligence Unified Naval Streaming System (GUNSS) and 2) Moving Target Indicator (MTI) for Broad Area Maritime Surveillance - Demonstrator (BAMS-D).

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Increment I	0.000	34.331	17.400	0.000	17.400
Articles:	-	-	-	-	-
Description: Common Control System (CCS) Increment I provides Unmanned Air System Vehicle Management (VM) with legacy platform Mission Management/Planning (MM/MP) capability hosted on legacy platform hardware required to support Unmanned System(s) (UxS) control system development, integration, and test. Initial target platforms include CBARS, Triton, and Fire Scout.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: FY16 plans include continuation of CCS Increment 1 Vehicle Management software development, integration and test. Effort will additionally ensure that maximum commonality and applicability is maintained for continued transition of other UxSs.					
FY 2017 Base Plans: Development of CCS VM capability will continue in FY17 and will include initial CCS VM build delivery to CBARS to support the CBARS development and will also include initial CCS VM engineering build releases to support risk reduction for Triton and Fire Scout VM transition. FY17 plans include requirements and architecture identification, definition, and analysis of surface, sub-surface, and ground UxS.					
FY 2017 OCO Plans: N/A					
Title: Increment II	0.000	7.500	19.109	0.000	19.109
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability	Project (Number/Name) 3379 / Common Control System

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: CCS Increment II will maintain and update as necessary the core Vehicle Management (VM) baseline and will add common Mission Management/Mission Planning (MM/MP) capability hosted on legacy platform hardware. CCS Increment II will be the initial MM/MP baseline for CBARS. Plans include ensuring that maximum commonality is maintained for transition to Triton, Fire Scout, and other UxS.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: FY16 plans include requirements identification, definition, analysis, UxS trade studies, and initiation of accelerated development of migration plans for Triton and Fire Scout UAS platforms.</p> <p>FY 2017 Base Plans: In FY17 CCS Increment II will, concurrently with Increment I development, refine requirements and architecture and accelerate software development for the MM/MP core components. FY17 activities include initial CCS Increment II software build development to support CBARS, the development of the GUNSS and the MTI Speed-to-the-Fleet capabilities initiatives, and continuation of trade studies and requirements development for Triton and Fire Scout.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	41.831	36.509	0.000	36.509

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RD TEN/0604404N: <i>Unman Carrier Launch A/B Surv & Strk (UCLASS) Sys</i>	382.542	434.699	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,077.510
• RD TEN/0605414N: <i>Carrier Based Aerial Refueling System (CBARS)</i>	0.000	0.000	89.000	-	89.000	349.000	544.000	646.000	532.000	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability	Project (Number/Name) 3379 / Common Control System

D. Acquisition Strategy

PEO(U&W) issued an Acquisition Decision Memorandum (ADM) 5000 Ser PEO(U&W)/11-093 dated July 1, 2011 to establish the Common Control System (CCS) to achieve Unmanned Aircraft System (UAS) common control across Program Executive Office Unmanned Aviation and Weapon Systems (PEO(U&W)) UAS platforms to eliminate redundant efforts, encourage innovation, and improve cost control of unmanned aviation. In coordination with the ADM the program will define, develop and deliver a common control system to operate respective naval Unmanned Systems (UxSs). This will include a common framework, a common user interface, and common components that will be integrated and tested with unique components on emerging or legacy platforms. The CCS acquisition approach is to provide increasing UxS capability through incremental development for UxS platform as follows: Increment I will provide common Vehicle Management capability with Carrier Based Aerial Refueling System (CBARS), Triton, and Fire Scout as the initial transition platforms; Increment II will maintain and update as necessary the core VM baseline and adds Mission Management/Mission Planning capability; Increment III aligns Common Control software and hardware for the Naval UxS control segment. CCS was being developed initially for the UCLASS Acquisition Category (ACAT) 1D program and will be provided to the CBARS air vehicle prime as Government-Furnished Equipment (GFE) and also for transition into Triton and Firescout. CCS will leverage existing government-owned products as well as employ competitive procurement vehicles to support CBARS and will transition Triton, Firescout, and other Naval UxS across multiple domains.

E. Performance Metrics

CCS uses a Service-Oriented Architecture based on the OSD Unmanned Control Segment (UCS) architecture. The CCS Capability Development Document (CDD) will be developed in FY16-17 and will inform the Common Control requirements and Key Performance Parameters (KPPs). CCS will inherit common requirements of each supported UxS platform's CDD/CPD through the respective specification trees. CCS must therefore also support the KPPs, Measures of Suitability/Effectiveness, Concepts of Operations, etc., flowed down from each supported platform.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability	Project (Number/Name) 3379 / Common Control System
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Software Development	C/CPFF	TBD : TBD	0.000	0.000		17.200	Apr 2016	5.660	Apr 2017	-		5.660	0.000	22.860	22.860
Primary Software Development	C/CPFF	Raytheon : Dulles, VA	0.000	0.000		5.750	Apr 2016	11.141	Dec 2016	-		11.141	0.000	16.891	16.891
Advanced Development	WR	NAWC-WD : China Lake, CA	0.000	0.000		2.800	Nov 2015	2.700	Nov 2016	-		2.700	0.000	5.500	-
Subtotal			0.000	0.000		25.750		19.501		-		19.501	0.000	45.251	-

Remarks

The FY16 Primary Software Development contract will be a competitive award in FY16 via an existing NAVAIR Multiple Award Contract (MAC) so the performing activity and location are currently TBD due to the competitive contracting strategy.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWC-AD : Pax River, MD	0.000	0.000		6.473	Nov 2015	8.395	Nov 2016	-		8.395	Continuing	Continuing	Continuing
Lead Systems Engineering and Integration	WR	NAWC-WD : Pt Mugu, CA	0.000	0.000		5.800	Nov 2015	3.903	Nov 2016	-		3.903	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		12.273		12.298		-		12.298	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E	WR	NAWC-AD : Pax River, MD	0.000	0.000		1.180	Nov 2015	1.573	Nov 2016	-		1.573	Continuing	Continuing	Continuing
DT&E	WR	NAWC-WD : Pt Mugu, CA	0.000	0.000		1.585	Nov 2015	1.700	Nov 2016	-		1.700	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		2.765		3.273		-		3.273	-	-	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305205N / (U)UAS Integration and Interoperability	Project (Number/Name) 3379 / Common Control System

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Common Control System				
Acquisition Milestones: Increment I Initial Vehicle Management (VM) Software Release	2	2017	2	2017
Acquisition Milestones: Increment II Initial Mission Management/Mission Planning (MM/MP) Software Release	3	2020	3	2020
System Development: Increment I VM Software Development	1	2016	4	2021
System Development: Increment I VM Software Integration and Test	1	2016	4	2021
System Development: Increment II MM/MP Requirements/Architecture Development	1	2016	2	2018
System Development: Increment II MM/MP Software Development	4	2017	4	2021
System Development: Increment II MM/MP Software Integration and Test	2	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	PE 0305208M I (U) <i>Distributed Common Ground/Surface Systems</i>											
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	59.849	10.916	1.105	2.100	-	2.100	2.928	2.429	1.245	0.266	Continuing	Continuing
2268: <i>Distributed Common Ground System (DCGS-MC)</i>	59.849	10.916	1.105	2.100	-	2.100	2.928	2.429	1.245	0.266	Continuing	Continuing

Note

Effective FY 2014 the Increment II Advanced Analytics/All Source capability was realigned to Intelligence Analysis System (PE 0206625M). Effective FY 2015 the Joint Surveillance Target Attack Radar System (JSTARS) capability (PE 0206625M) is subsumed by DCGS-MC. Topographic Production Capability (TPC) Family of Systems (FOS) and Tactical Exploitation Group (TEG) Family of Systems (FOS) have merged into DCGS-MC. Funding for these efforts under PE 0206625M has been realigned to DCGS-MC PE 0305208M effective FY 2011.

A. Mission Description and Budget Item Justification

DCGS-MC, in compliance with the Department of Defense DCGS Family of Systems (FOS) concept, is a service-level effort to migrate select USMC Intelligence, Surveillance and Reconnaissance (ISR) processing and exploitation capabilities into a single, integrated, net-centric baseline that will be interoperable with other services and agencies.

Multiple functional capability sets will be configured to support Marine intelligence analysts across the Marine Air-Ground Task Force (MAGTF). The goal of DCGS-MC is to make external and internal ISR data more visible, accessible, and understandable.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	11.606	1.105	0.143	-	0.143
Current President's Budget	10.916	1.105	2.100	-	2.100
Total Adjustments	-0.690	0.000	1.957	-	1.957
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.690	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	2.000	-	2.000
• Rate/Misc Adjustments	0.000	0.000	-0.043	-	-0.043

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208M I (U) <i>Distributed Common Ground/Surface Systems</i>	
<u>Change Summary Explanation</u> Decrease in Distributed Common Ground/Surface Systems by \$1.5M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015. The increase of \$1.957M in FY 2017 aligns funding profile to the acquisition phase for the DCGS-MC portfolio. The increase of \$.995M from FY 2016 to FY 2017 initiates development efforts to improve interoperability between DCGS-MC All Source Fusion and DCGS-MC GEOINT, and initiates development and optimization efforts for the TPC FoS Geospatial Intelligence Framework Web Dissemination Tool (GIFWEB) and Operating System migration.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305208M / (U)Distributed Common Ground/Surface Systems				Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2268: <i>Distributed Common Ground System (DCGS-MC)</i>	59.849	10.916	1.105	2.100	-	2.100	2.928	2.429	1.245	0.266	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Effective FY 2015 the Joint Surveillance Target Attack Radar System (JSTARS) capability (PE 0206625M) is subsumed by DCGS-MC.

A. Mission Description and Budget Item Justification

Distributed Common Ground/Surface System Marine Corps (DCGS-MC) Enterprise will be a Family of Systems (FoS) providing all source analysis and production within garrison and deployed Marine Corps organizations. DCGS-MC will comply with the Department of Defense (DOD) DCGS Enterprise interoperability and information sharing requirements by migrating select processing, exploitation, analysis, and production capabilities into a single, integrated, net-centric baseline within the Marine Corps Intelligence, Surveillance and Reconnaissance Enterprise (MCISRE). This baseline will enable MCISRE analysts to deliver tactically focused, operational and strategic intelligence at the tactical edge throughout all phases of operations and will provide relevant, precise decision support for Joint Task Force (JTF), Marine Air Ground Task Force (MAGTF), and subordinate Marine units. The DoD DCGS Enterprise provides worldwide garrison, and forward projection of tactical ISR capabilities at the JTF level and below. The DoD DCGS Enterprise enhances intelligence sharing within the Joint Services, the Intelligence Community, and Coalition Forces throughout all phases of operations. Each individual Military Service DCGS Program of Record provides unique and distinct capabilities to the overall DoD DCGS Enterprise. DCGS-MC GEOINT consists of GEOINT Imagery and Topographic Capability, Enterprise DCGS Integration Backbone System (EDS), Virtual Imagery Processing - Marine Corps (VIP-MC), Target Material Production (TMP) Full Motion Video - One (FMV-One), and Moving Target Indicator (MTI) systems. These capabilities will provide the USMC GEOINT analysts with the capability to process, disseminate, exploit, analyze and produce intelligence. Future capabilities will be delivered via clearly defined Capability Drops. The specific content of each Capability Drop will be determined by an integrated assessment of user needs, technology readiness, risk mitigation, and affordability.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Test and Evaluation	0.836	0.650	0.543	0.000	0.543
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Continued Post Milestone C System Engineering Test Review (SETR) activities associated with DCGS-MC Capability Drops, software integration and associated test events.					
- Continued Developmental Testing in support of DCGS-MC GEOINT IOT&E initiatives.					
- Continued Developmental Testing in association with OUSD-I C4ISR related Exercises.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U) Distributed Common Ground/Surface Systems	Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Continued test efforts in support of commonality of HW/SW baselines across GEOINT systems, such as DCGS-MC, VIP-MC, TEG-RWS and TPC.</p> <p>- Completed Marine Corps Geospatial Data Base 2.0 developmental testing in support of Ground-Warfighter Geospatial Data Model 2.2 integration within the Topographic Production Capability Family of Systems baseline</p> <p>-Initiated test efforts in support of Geodetic Survey Set refresh.</p> <p>FY 2016 Plans:</p> <p>- Continue Post Milestone C System Engineering Test Review (SETR) activities associated with DCGS-MC Capability Drops, software integration and associated test events.</p> <p>-Continue test efforts in support of commonality of HW/SW baselines across GEOINT systems, such as DCGS-MC, VIP-MC, TEG-RWS and TPC.</p> <p>- Complete test efforts in support of Geodetic Survey Set refresh.</p> <p>- Initiate EDS Graphic User Interface update.</p> <p>- Initiate Cyber Security Test Events to maintain system security postures.</p> <p>- Initiate Operating System upgrade integration into DCGS-MC GEOINT Systems.</p> <p>FY 2017 Base Plans:</p> <p>- Continue Post Milestone C System Engineering Test Review (SETR) activities associated with DCGS-MC Capability Drops, software integration and associated test events.</p> <p>- Continue test efforts in support of commonality of HW/SW baselines across GEOINT systems, such as DCGS-MC, VIP-MC, TEG-RWS and TPC.</p> <p>- Continue Cyber Security Test Events to maintain system security postures.</p> <p>- Complete Operating System upgrade integration into DCGS-MC GEOINT Systems.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Product Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <p>-Expanded services and development associated with the Ozone Widget framework, DCGS-Enterprise StoreFront and Common Data Link (CDL) enhancements.</p> <p>-Continued research and development efforts for DCGS-MC GEOINT capabilities.</p> <p>-Continued DCGS-MC CDL optimization and Human Systems Interface (HSI) analysis and refinement.</p> <p>-Continued to support architecture studies related to intelligence, surveillance, and reconnaissance activities.</p>	7.172	0.000	1.000	0.000	1.000
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U)Distributed Common Ground/Surface Systems	Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Completed research and development efforts associated with follow-on versions of the DCGS Integration Backbone (DIB). -Completed Common GEOINT Software Market Research. -Completed proof of concept demonstration for Common GEOINT software platform integration. -Completed DCGS-MC Common Data Link (CDL) optimization between Joint Surveillance Target Attack Radar System (JSTARS) and Tactical Wideband Interoperable Surface Terminal antennas (TWISTER). -Initiated development and optimization efforts for Server 2012 migration into the DCGS-MC portfolio of systems baseline. FY 2016 Plans: -N/A FY 2017 Base Plans: -Continue development and optimization efforts for DCGS-MC GEOINT. -Initiate development and optimization efforts for TPC FoS Geospatial Intelligence Framework Web Dissemination Tool (GIFWEB). -Initiate development and optimization efforts for the next Operating System migration as directed by HQMC/ Cyber Command. -Initiate development efforts to improve interoperability between DCGS-MC all Source Fusion and DCGS-MC GEOINT FY 2017 OCO Plans: N/A					
Title: Management Services - Engineering and Technical Services Articles:	0.320 -	0.000 -	0.100 -	0.000 -	0.100 -
FY 2015 Accomplishments: -Continued system requirements analysis and review associated with DCGS-MC GEOINT Optimization Engineering Change Proposals (ECPs), Configuration Control Boards. -Completed system requirements analysis to reduce TEG-RWS variants from 4 to 1. -Completed systems requirements analysis to support development and fielding of VIP-MC. -Completed prototype of FMV One capability and began integration into TEG-RWS FOS. FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U)Distributed Common Ground/Surface Systems	Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-N/A					
<p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Initiate system requirement analysis and review for future software releases to include All Source Fusion and Signals Intelligence. -Initiate Requirements Traceability Mapping (RTM) for all DCGS-MC requirements to key performance parameters (KPPs), Key System Attributes (KSAs) through the systems sub-systems specs and systems requirement specs. -Initiate Program Engineering Change Proposals (ECPs) as necessary. -Initiate systems requirements review and utilize DIB Management Office (DMO) to refine all system requirements through the requirements development process (RDP). <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Support</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Conducted DCGS-MC Common Data Link (CDL) optimization between JSTARS and TWISTER antenna. -Established VIP-MC HW baseline using commonality across the EDS. -Continued system/engineering requirement analysis and review for future Capability Drops such as All Source Fusion and Signals Intelligence. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Continue system/engineering requirement analysis and review for future Capability Drops such as All Source Fusion and Signals Intelligence. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Continue system/engineering requirement analysis and review for future Capability Drops such as All Source Fusion and Signals Intelligence. <p>FY 2017 OCO Plans: N/A</p>	2.588	0.455	0.457	0.000	0.457
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	10.916	1.105	2.100	0.000	2.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U) <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 2268 / <i>Distributed Common Ground System (DCGS-MC)</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• PMC 4767: <i>Distributed Common Ground System</i>	20.993	1.947	1.149	-	1.149	6.906	12.404	12.286	13.036	0.000	93.240

Remarks

D. Acquisition Strategy

The Acquisition Strategy shall follow a hybrid approach consisting of a viable mix of alternatives that allows flexibility, agility and rapid fielding of new capabilities. An evolutionary acquisition approach will provide users with time-phased increments of capabilities that (while less than the full requirement), promote earlier delivery, improve affordability, and reduce risk. The evolutionary approach enables DCGS-MC to effectively assess and leverage emerging technologies to accelerate introduction into MCISR-E. The DCGS-MC capabilities will be fielded in increments through operational capability drops.

E. Performance Metrics

- Milestone Assessment Team (MAT) Reviews 11 March 2015 and 8 June 2015
- Quarterly Dashboard Input
- IOC

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U)Distributed Common Ground/Surface Systems	Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DCGS PRIOR YEAR CUMMULATIVE FUNDING	Various	N/A : N/A	21.116	0.000		0.000		0.000		-		0.000	0.000	21.116	-
DCGS	WR	SSCA : Charleston, SC	27.477	3.658	Jan 2015	0.000		1.000	Feb 2017	-		1.000	Continuing	Continuing	Continuing
TPC SW Development	WR	NSWC Crane : Crane, IN	0.000	0.273	May 2015	0.000		0.000		-		0.000	0.000	0.273	-
VIP-MC Technical and Develop Support	WR	NRL : Washington DC	0.000	0.221	Nov 2014	0.000		0.000		-		0.000	0.000	0.221	-
DMO DIB cost and SW Integration	MIPR	NSMA : Washington, DC	0.000	0.320	Aug 2015	0.000		0.000		-		0.000	0.000	0.320	-
VIP-MC technical and development	MIPR	NRO : Washington, DC	0.000	2.700	Feb 2015	0.000		0.000		-		0.000	0.000	2.700	-
Subtotal			48.593	7.172		0.000		1.000		-		1.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DCGS PRIOR YEAR CUMMULATIVE FUNDING	Various	N/A : N/A	3.564	0.000		0.000		0.000		-		0.000	0.000	3.564	-
DCGS	WR	SSCA : Charleston, SC	1.189	0.912	Feb 2015	0.415	Feb 2016	0.457	Feb 2017	-		0.457	0.000	2.973	-
PMMI Architecture Study	C/FFP	MCSC : Quantico, VA	0.000	0.312	Feb 2015	0.000		0.000		-		0.000	0.000	0.312	-
TPC SW Integrated baseline support	WR	NSWC Crane : Crane, IN	0.000	1.181	Mar 2015	0.000		0.000		-		0.000	0.000	1.181	-
Program office travel	Various	MCSC : Quantico, VA	0.000	0.183	Sep 2015	0.040	Sep 2016	0.000		-		0.000	0.000	0.223	-
DCGS	C/FFP	DMO : Hanscom AFB, MA	0.000	0.000	Jun 2015	0.000		0.000		-		0.000	0.000	0.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U)Distributed Common Ground/Surface Systems	Project (Number/Name) 2268 / Distributed Common Ground System (DCGS-MC)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DCGS	C/BA	SDL : Logan, Utah	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Subtotal			4.753	2.588		0.455		0.457		-		0.457	0.000	8.253	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DCGS PRIOR YEAR CUMMULATIVE FUNDING	Various	N/A : N/A	3.942	0.000		0.000		0.000		-		0.000	0.000	3.942	-
DCGS	C/FFP	SSCA : Charleston, SC	1.487	0.761	Jan 2015	0.321	Feb 2016	0.543	Feb 2017	-		0.543	0.000	3.112	-
DDTE VPN Connectivity	MIPR	JITC : Indian Head, MD	0.000	0.075	Nov 2014	0.000		0.000		-		0.000	0.000	0.075	-
TPC Integration	C/CPFF	NSWC Crane : Crane, IN	0.000	0.000		0.329	Mar 2016	0.000		-		0.000	0.000	0.329	-
Subtotal			5.429	0.836		0.650		0.543		-		0.543	0.000	7.458	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DCGS	MIPR	MITRE : Stafford, Va	1.074	0.320	Nov 2014	0.000		0.100	Dec 2016	-		0.100	0.000	1.494	-
Subtotal			1.074	0.320		0.000		0.100		-		0.100	0.000	1.494	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			59.849	10.916	1.105	2.100	-	2.100	-	-	-

Remarks

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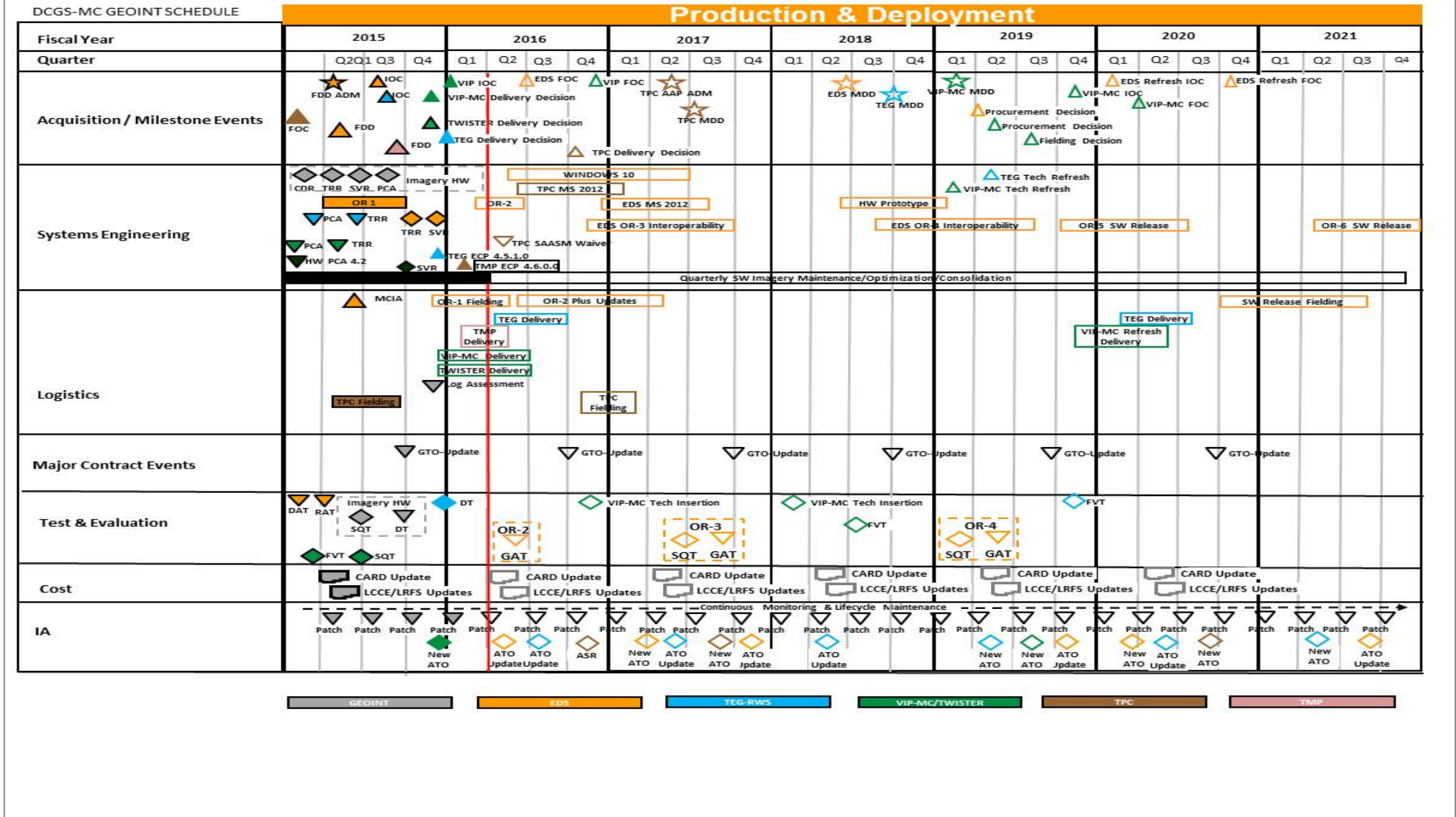
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0305208M / (U) Distributed Common
Ground/Surface Systems

Project (Number/Name)
2268 / Distributed Common Ground System
(DCGS-MC)



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208M / (U) <i>Distributed Common Ground/Surface Systems</i>	Project (Number/Name) 2268 / <i>Distributed Common Ground System (DCGS-MC)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2268				
VIP-MC Delivery	4	2015	4	2015
DCGS-MC GEOINT Hardware (TEG-RWS) Delivery	2	2016	4	2016
DCGS-MC GEOINT Full Operational Capability for EDS	2	2016	2	2016
DCGS-MC GEOINT Release 2 (T&E OR-2)	1	2016	3	2016
Fielding GEOINT TPC FOS (GSS)	4	2016	1	2017
Fielding DCGS-MC (EDS, TEG-RWS, TPC FoS, VIP-MC, TMP) Windows 10 upgrade	2	2016	2	2017
DCGS-MC GEOINT Release 3 (T&E OR-3)	2	2017	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	185.335	18.146	23.149	44.571	-	44.571	36.301	36.542	29.761	36.624	Continuing	Continuing
2174: <i>Distributed Common Ground System-Navy (DCGS-N)</i>	185.335	18.146	1.730	1.637	-	1.637	0.319	0.351	0.269	0.275	Continuing	Continuing
2227: <i>Distributed Common Ground System (DCGS-N) Inc 2</i>	0.000	0.000	21.419	42.934	-	42.934	35.982	36.191	29.492	36.349	58.624	260.991

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): MN40, M464

A. Mission Description and Budget Item Justification

The Distributed Common Ground System - Navy (DCGS-N) is the Navy's portion of the Under Secretary of Defense, Intelligence (USD (I)) DCGS-N Family of Systems (FoS). The Department of Defense (DoD) has defined a DCGS architecture that will be compatible and interoperable across all of the Services' Intelligence, Surveillance and Reconnaissance (ISR) systems and operations. DCGS accesses and ingests data from space borne, airborne, subsurface, and surface ISR collection assets, intelligence databases and intelligence producers. This collected data is shared across a Joint enterprise using the DCGS Integration Backbone (DIB) and in time, the Defense Intelligence Information Enterprise (DI2E) to enhance access and sharing of ISR information across Joint forces through the use of common enterprise standards and services. DCGS FoS supports Joint Task Force (JTF)-level and below combat operations with critical intelligence for battle management and information dominance across the full spectrum of operations, including peace, conflict, war, and Overseas Contingency Operations (OCO). DCGS is a cooperative effort between the services, agencies, and DoD to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms. DCGS-N core components include the Analyst Work Station from the Global Command and Control System (GCCS) - Integrated Imagery and Intelligence (I3), Generic Area Limitation Environment (GALE) Signal Intelligence (SIGINT), Common Geo-positioning Services (CGS), Image Product Library (IPL), Modernized Integrated Database (MIDB), Joint Concentrator Architecture (JCA) and Track Management Services.

The DCGS-N system represents the integration of 1) The processing and exploitation of tactical and Imagery Intelligence (IMINT) and Signals Intelligence (SIGINT); 2) Precision target geospatial, mensuration, and imagery dissemination capabilities; 3) Selected national IMINT requirements and processing capabilities from the National Geospatial-Intelligence Agency (NGA); and 4) Sharing of Intelligence, Surveillance, Reconnaissance and Targeting and Command and Control information via DIB, DI2E, and Net-Centric Enterprise Services (NCES) standards with a wide range of customers (e.g., Global Command and Control System - Maritime (GCCS-M)), Joint Mission Planning System (JMPS), and many others.

The DCGS-N Enterprise Node (DEN), which incorporates current DIB standards and DI2E policy, facilitates interoperability and data sharing among the DCGS FoS. DCGS-N ensures compliance with the DoD DCGS network architecture.

The Navy is establishing an ISR Enterprise way ahead that will emphasize a reach back strategy to provide intelligence products to support deployed ship and shore operations. The Navy will also migrate to a Service Oriented Architecture (SOA) that requires the development, integration, and testing of a Maritime ISR Enterprise

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	
<p>capability, development and migration of ISR SOA applications, and development and integration to leverage a Common Computing Environment (CCE). Additionally, DCGS-N will become the focal point for migration of Maritime Domain Awareness (MDA) fusion and analysis (MFAS) tool applications for the Navy.</p> <p>DCGS-N Increment 2 addresses a critical shortfall in Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capability and capacity to support operational, tactical planning, and execution across the full range of joint military operations. Existing TCPED shortfalls will be exacerbated by planned Navy, Joint, and Allied fielding of new Intelligence, Surveillance and Reconnaissance (ISR) platforms. Currently fielded systems provide localized processing capabilities that will be overwhelmed in future years without a significant change in the way the Navy processes, exploits and disseminates intelligence data. DCGS-N Increment 2 will deliver all source fusion and analytical capabilities; provide Maritime Domain Awareness (MDA) capabilities and integrate Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capabilities to improve the use and analysis of sensor and platform data. Distributed Common Ground System- Navy (DCGS-N) Increment 2 will be based on an enterprise solution to share this information across commands, services, and agencies to promote shared situational awareness. DCGS-N Increment 2 consists of multiple releases. The first release provides an enhanced Navy Intelligence, Surveillance and Reconnaissance (ISR) enterprise that converges and builds on the DCGS-N Increment 1 and Maritime Domain Awareness Enterprise Nodes; leverages the Defense Intelligence Information Enterprise (DI2E); is compliant with the Common Computing Environment (CCE); federates ISR and TCPED workflow and production improving throughput through automation; exploits new and evolving unmanned systems sensor data; provides Multi-Intelligence (Multi-INT) cross-queuing and modular tools. The second release enhances afloat ISR capabilities by providing a set of software centric tools providing Multi-INT fusion and analysis, behavior prediction and intelligent knowledge management designed to operate in disconnected or denied communications environment. Follow-on releases will be developed based on Fleet requirements.</p> <p>Intelligence Carry-On Program (ICOP) is a suite of multi-source intelligence and analytical capabilities which includes an integrated Three-Dimensional (3-D) operational picture displaying intelligence and other data sources to provide a richer and more complete picture of the battle space on Unit Level platforms. The system supports a full motion video capability that receives, processes, exploits, and disseminates organic and non-organic data as well as the ability to process and correlate Electronic Intelligence (ELINT) and external Communications Intelligence (COMINT Externals). It integrates mature Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) applications with shared storage and communication paths to reach back to the DCGS-N Enterprise Node (DEN), and it provides data sharing to the Maritime Operations Centers (MOC) and national ISR systems, making tactical users a part of the larger ISR enterprise.</p> <p>In FY17, DCGS-N Increment 1 will support development, integration and regression testing required to align with emerging national imagery standards.</p> <p>In FY17, DCGS-N Increment 2 will begin integration and development of Fleet Capability Release-1 (FCR-1) which will center on integrating Maritime Domain Awareness capabilities into DCGS-N Increment 2. DCGS-N Increment 2 will award the DCGS-N Increment 2 Enterprise Integration contract to support the Government Integrator in the completion of FCR-1 and integration and development of FCR-2 and beyond. The program will begin efforts to include In Progress Test Review and Build Technical Review for a FCR-2 Build Decision in FY18.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	18.146	33.149	37.737	-	37.737
Current President's Budget	18.146	23.149	44.571	-	44.571
Total Adjustments	0.000	-10.000	6.834	-	6.834
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-10.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	6.834	-	6.834

Change Summary Explanation

Technical: Not applicable.

Schedule: 1) DCGS-N Increment 2's development, milestones, and fielding have been updated to reflect a 6 month delay to Initial Operational Test and Evaluation (IOT&E).

2) ICOP Full Rate Production (FRP) was moved from 3 QTR of FY15 to 2 QTR of FY16.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>				Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2174: <i>Distributed Common Ground System-Navy (DCGS-N)</i>	185.335	18.146	1.730	1.637	-	1.637	0.319	0.351	0.269	0.275	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: MN40												

A. Mission Description and Budget Item Justification

The Distributed Common Ground System - Navy (DCGS-N) is the Navy's portion of the Under Secretary of Defense, Intelligence (USD (I)) DCGS-N Family of Systems (FoS). The Department of Defense (DoD) has defined a DCGS architecture that will be compatible and interoperable across all of the Services' Intelligence, Surveillance and Reconnaissance (ISR) systems and operations. DCGS accesses and ingests data from space borne, airborne, subsurface, and surface ISR collection assets, intelligence databases and intelligence producers. This collected data is shared across a Joint enterprise using the DCGS Integration Backbone (DIB) and in time, the Defense Intelligence Information Enterprise (DI2E) to enhance access and sharing of ISR information across Joint forces through the use of common enterprise standards and services. DCGS FoS supports Joint Task Force (JTF)-level and below combat operations with critical intelligence for battle management and information dominance across the full spectrum of operations, including peace, conflict, war, and Overseas Contingency Operations (OCO). DCGS is a cooperative effort between the services, agencies, and DoD to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms. DCGS-N core components include the Analyst Work Station from the Global Command and Control System (GCCS) - Integrated Imagery and Intelligence (I3), Generic Area Limitation Environment (GALE) Signal Intelligence (SIGINT), Common Geo-positioning Services (CGS), Image Product Library (IPL), Modernized Integrated Database (MIDB), Joint Concentrator Architecture (JCA) and Track Management Services.

The DCGS-N system represents the integration of 1) The processing and exploitation of tactical and Imagery Intelligence (IMINT) and Signals Intelligence (SIGINT); 2) Precision target geolocation, mensuration, and imagery dissemination capabilities; 3) Selected national IMINT requirements and processing capabilities from the National Geospatial-Intelligence Agency (NGA); and 4) Sharing of Intelligence, Surveillance, Reconnaissance and Targeting and Command and Control information via DIB, DI2E, and Net-Centric Enterprise Services (NCES) standards with a wide range of customers (e.g., Global Command and Control System - Maritime (GCCS-M)), Joint Mission Planning System (JMPS), and many others.

The DCGS-N Enterprise Node (DEN), which incorporates current DIB standards and DI2E policy, facilitates interoperability and data sharing among the DCGS FoS. DCGS-N ensures compliance with the DoD DCGS network architecture.

The Navy is establishing an ISR Enterprise way ahead that will emphasize a reach back strategy to provide intelligence products to support deployed ship and shore operations. The Navy will also migrate to a Service Oriented Architecture (SOA) that requires the development, integration, and testing of a Maritime ISR Enterprise capability, development and migration of ISR SOA applications, and development and integration to leverage a Common Computing Environment (CCE). Additionally, DCGS-N will become the focal point for migration of Maritime Domain Awareness (MDA) fusion and analysis (MFAS) tool applications for the Navy.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>
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DCGS-N Increment 2 addresses a critical shortfall in Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capability and capacity to support operational, tactical planning, and execution across the full range of joint military operations. Existing TCPED shortfalls will be exacerbated by planned Navy, Joint, and Allied fielding of new Intelligence, Surveillance and Reconnaissance (ISR) platforms. Currently fielded systems provide localized processing capabilities that will be overwhelmed in future years without a significant change in the way the Navy processes, exploits and disseminates intelligence data. DCGS-N Increment 2 will deliver all source fusion and analytical capabilities; provide Maritime Domain Awareness (MDA) capabilities and integrate Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capabilities to improve the use and analysis of sensor and platform data. Distributed Common Ground System- Navy (DCGS-N) Increment 2 will be based on an enterprise solution to share this information across commands, services, and agencies to promote shared situational awareness. DCGS-N Increment 2 consists of multiple releases. The first release provides an enhanced Navy Intelligence, Surveillance and Reconnaissance (ISR) enterprise that converges and builds on the DCGS-N Increment 1 and Maritime Domain Awareness Enterprise Nodes; leverages the Defense Intelligence Information Enterprise (DI2E); is compliant with the Common Computing Environment (CCE); federates ISR and TCPED workflow and production improving throughput through automation; exploits new and evolving unmanned systems sensor data; provides Multi-Intelligence (Multi-INT) cross-queuing and modular tools. The second release enhances afloat ISR capabilities by providing a set of software centric tools providing Multi-INT fusion and analysis, behavior prediction and intelligent knowledge management designed to operate in disconnected or denied communications environment. Follow-on releases will be developed based on Fleet requirements.

Intelligence Carry-On Program (ICOP) is a suite of multi-source intelligence and analytical capabilities which includes an integrated Three-Dimensional (3-D) operational picture displaying intelligence and other data sources to provide a richer and more complete picture of the battle space on Unit Level platforms. The system supports a full motion video capability that receives, processes, exploits, and disseminates organic and non-organic data as well as the ability to process and correlate Electronic Intelligence (ELINT) and external Communications Intelligence (COMINT Externals). It integrates mature Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) applications with shared storage and communication paths to reach back to the DCGS-N Enterprise Node (DEN), and it provides data sharing to the Maritime Operations Centers (MOC) and national ISR systems, making tactical users a part of the larger ISR enterprise.

In FY17, DCGS-N Increment 1 will support development, integration and regression testing required to align with emerging national imagery standards.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: DCGS-N Increment 1	1.500	1.730	1.637	0.000	1.637
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
Completed correction of deficiencies to the Block 2 baseline based on results noted during Block 2 Development Testing and began Afloat Follow-On Test and Evaluation efforts.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>DCGS-N Increment 1 to develop, integrate, and perform regression testing required to align with emerging national imagery standards. In addition, DCGS-N Increment 1 to complete any statutory and regulatory requirements needed to meet national imagery standards.</p> <p>FY 2017 Base Plans: DCGS-N Increment 1 will continue to develop, integrate, and perform regression testing required to align with emerging national imagery standards. In addition, DCGS-N Increment 1 will continue to complete any statutory and regulatory requirements needed to meet national imagery standards.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: DCGS-N Increment 2</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Completed initial Joint Staff routing of the Increment 2 Information System Capability Development Document (IS CDD). Updated the Increment 2 Cost Analysis Requirements Description (CARD) to support the Service Cost Position (SCP) which was completed. Completed the Requirements Governance Board (RGB) charter and updated the DCGS-N Inc 2 Requirements Governance Board (DRGB). Conducted market research by conducting an Industry Day. Began Fleet Capability Release-0 (FCR-0) risk reduction efforts in support of the Program Executive Officer, Command, Control, Communications, Computers and Intelligence (PE0 C4I) prototype that will demonstrate critical Fleet high priority capabilities, such as High Side Data Fusion, Level 1 Data Fusion, and Modern Collection Management tools.</p> <p>FY 2016 Plans: DCGS-N Increment 2 moved to Project 2227</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	15.021	0.000	0.000	0.000	0.000
	-	-	-	-	-
<p>Title: Intelligence Carry-On Program (ICOP)</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	1.625	0.000	0.000	0.000	0.000
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Completed Operational Testing; deemed operationally effective and suitable. Achieved Milestone C in 3Q FY15 and completed Guided Missile Destroyer (DDG) class platforms Topside analysis. Initiated and complete Topside Studies for LPD-17 and Guided Missile Cruiser (CG) class platforms. FY 2016 Plans: N/A FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	18.146	1.730	1.637	0.000	1.637

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPN 2914: <i>Distributed Common Ground System-Navy (DCGS-N)</i>	23.649	31.809	12.676	12.000	24.676	22.639	12.884	9.015	13.173	280.715	544.684

Remarks
0305208N/2914 is a shared PE with DCGS-N Increment 1, Increment 2, and ICOP

D. Acquisition Strategy
The Distributed Common Ground System - Navy (DCGS-N) program utilizes mature Commercial-Off-The-Shelf (COTS) and Governmental-Off-The-Shelf (GOTS) capabilities. The Navy adapts and integrates these capabilities and ensures interoperability with the DCGS Integration Backbone (DIB) standards and Defense Intelligence Information Enterprise (DI2E) policies. Integration of DCGS-N Increment 1 components has transitioned from Government-led to Industry-led based on the award of DCGS-N's Prime Mission Product (PMP) contract. Intelligence Carry-On Program (ICOP) utilizes mature COTS/GOTS with a focus on multi-source intelligence and analytical capabilities and unit-level Intelligence, Surveillance and Reconnaissance (ISR) processing, exploitation and dissemination for Surface operations, facilitating receipt, editing and sharing of imagery and video from aerial assets and shipboard cameras. ICOP utilizes the DCGS-N Enterprise Node (DEN) in order to ensure interoperability with the DCGS-N Family of Systems (FoS). ICOP builds on the Unit Level Rapid Technology Transition (RTT) prototypes.

E. Performance Metrics
DCGS-N Increment 1 Goal: Meet national imagery standards.
DCGS-N Increment 1 Metric: Support development, integration and regression testing required to align with emerging national imagery standards.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>				Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>							

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development Prior Years	Various	Various : Various	77.345	0.000		0.000		0.000		-		0.000	0.000	77.345	-
Systems Engineering	WR	SSC LANT : Charleston, SC	11.942	0.000		0.300	Oct 2015	0.265	Oct 2016	-		0.265	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	SETA SAIC : Columbia, MD	6.810	2.400	Dec 2014	0.000		0.000		-		0.000	0.000	9.210	-
Systems Engineering	WR	SSC PAC : San Diego, CA	8.236	2.791	Oct 2014	0.000		0.000		-		0.000	0.000	11.027	-
Primary Hardware Development	WR	SSC PAC : San Diego, CA	0.600	0.900	Oct 2014	0.000		0.000		-		0.000	0.000	1.500	-
Software Development	C/CPFF	BAE : Rancho Bernardo, CA	1.260	1.200	Jun 2015	0.000		0.000		-		0.000	0.000	2.460	-
Software Development	WR	SSC PAC : San Diego, CA	2.500	5.125	Oct 2014	0.000		0.000		-		0.000	0.000	7.625	-
Licenses	WR	SSC PAC : San Diego, CA	0.000	0.100	Oct 2014	0.000		0.000		-		0.000	0.000	0.100	-
Software Development	WR	SSC LANT : Charleston, SC	0.000	0.000		0.300	Oct 2015	0.265	Oct 2016	-		0.265	0.000	0.565	-
Government Technical Oversight (Dev)	WR	SSC LANT : Charleston, SC	0.000	0.000		0.100	Oct 2015	0.100	Oct 2016	-		0.100	0.000	0.200	-
Subtotal			108.693	12.516		0.700		0.630		-		0.630	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support Prior Years	Various	Various : Various	35.073	0.000		0.000		0.000		-		0.000	0.000	35.073	-
Development Support	C/CPFF	SETA SAIC : Columbia, MD	3.881	0.400	Dec 2014	0.000		0.000		-		0.000	0.000	4.281	-
Development Support	WR	SSC LANT : Charleston, SC	1.480	0.000		0.200	Oct 2015	0.185	Oct 2016	-		0.185	0.000	1.865	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0305208N / Distributed Common Ground Sys				Project (Number/Name) 2174 / Distributed Common Ground System- Navy (DCGS-N)							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	SSC PAC : San Diego, CA	0.600	0.600	Oct 2014	0.000		0.000		-		0.000	0.000	1.200	-
Integrated Logistics Support	WR	SSC PAC : San Diego, CA	0.400	0.200	Oct 2014	0.000		0.000		-		0.000	0.000	0.600	-
Integrated Logistics Support	C/CPFF	SETA SAIC : Columbia, MD	1.050	0.400	Dec 2014	0.000		0.000		-		0.000	0.000	1.450	-
Configuration Management	WR	SSC PAC : San Diego, CA	1.000	0.300	Oct 2014	0.000		0.000		-		0.000	0.000	1.300	-
Subtotal			43.484	1.900		0.200		0.185		-		0.185	0.000	45.769	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation Prior Years	Various	Various : Various	19.103	0.000		0.000		0.000		-		0.000	0.000	19.103	-
Developmental Test & Evaluation	WR	SSC LANT : Charleston, SC	2.247	0.200	Oct 2014	0.600	Oct 2015	0.600	Oct 2016	-		0.600	0.000	3.647	-
Operational Test & Evaluation	C/CPFF	COTF : Norfolk, VA	0.120	0.000		0.100	Jul 2016	0.100	Jul 2017	-		0.100	0.000	0.320	-
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	1.800	1.700	Oct 2014	0.000		0.000		-		0.000	0.000	3.500	-
Developmental Test & Evaluation	C/CPFF	COTF : Norfolk, VA	0.300	0.400	Mar 2015	0.000		0.000		-		0.000	0.000	0.700	-
Subtotal			23.570	2.300		0.700		0.700		-		0.700	0.000	27.270	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>					Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services Prior Years	Various	Various : Various	3.374	0.000		0.000		0.000		-		0.000	0.000	3.374	-
Travel	Allot	SPAWAR : San Diego, CA	0.809	0.030	Nov 2014	0.020	Nov 2015	0.012	Nov 2016	-		0.012	0.000	0.871	-
Government Engineering Support	WR	SSC LANT : Charleston, SC	1.484	0.000		0.080	Nov 2015	0.080	Nov 2016	-		0.080	0.000	1.644	-
Program Management Support	C/CPFF	PSS BAH : San Diego, CA	3.921	1.400	Nov 2014	0.030	Nov 2015	0.030	Nov 2016	-		0.030	0.000	5.381	-
Subtotal			9.588	1.430		0.130		0.122		-		0.122	0.000	11.270	-
Project Cost Totals			185.335	18.146		1.730		1.637		-		1.637	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2174 / <i>Distributed Common Ground System-Navy (DCGS-N)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2174				
Trident Warrior / DCGS Family of Systems Inc 2 2015	2	2015	3	2015
DCGS-N BLK 2 Development	1	2015	2	2015
DCGS-N Inc 1 FD	1	2015	1	2015
ICOP and Foundation Kit Procurement	3	2015	4	2016
DCGS-N BLK 2 OT AFLOAT	4	2015	4	2015
DCGS-N Inc 1 Tech Refresh	1	2015	4	2018
ICOP FRP	2	2016	2	2016
ICOP MS C	3	2015	3	2015
ICOP DT/OT	1	2015	3	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2227: <i>Distributed Common Ground System (DCGS-N) Inc 2</i>	0.000	0.000	21.419	42.934	-	42.934	35.982	36.191	29.492	36.349	58.624	260.991
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: M464

Note
Cost-To-Complete reflects DCGS-N Increment 2 only. DCGS-N Increment 2 reflects Department of Navy Component Cost Position (CCP).

A. Mission Description and Budget Item Justification

DCGS-N Increment 2 addresses a critical shortfall in Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capability and capacity to support operational, tactical planning, and execution across the full range of joint military operations. Existing TCPED shortfalls will be exacerbated by planned Navy, Joint, and Allied fielding of new Intelligence, Surveillance and Reconnaissance (ISR) platforms. Currently fielded systems provide localized processing capabilities that will be overwhelmed in future years without a significant change in the way the Navy processes, exploits and disseminates intelligence data. Distributed Common Ground System- Navy (DCGS-N) Increment 2 will deliver all source fusion and analytical capabilities; provide Maritime Domain Awareness (MDA) capabilities and integrate Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) capabilities to improve the use and analysis of sensor and platform data. DCGS-N Increment 2 will be based on an enterprise solution to share this information across commands, services, and agencies to promote shared situational awareness. DCGS-N Increment 2 consists of multiple releases. The first release provides an enhanced Navy Intelligence, Surveillance and Reconnaissance (ISR) enterprise that converges and builds on the DCGS-N Increment 1 and Maritime Domain Awareness Enterprise Nodes; leverages the Defense Intelligence Information Enterprise (DI2E); is compliant with the Common Computing Environment (CCE); federates ISR and TCPED workflow and production improving throughput through automation; exploits new and evolving unmanned systems sensor data; provides Multi-Intelligence (Multi-INT) cross-queuing and modular tools. The second release enhances afloat ISR capabilities by providing a set of software centric tools providing Multi-INT fusion and analysis, behavior prediction and intelligent knowledge management designed to operate in disconnected or denied communications environment. Follow-on releases will be developed based on Fleet requirements.

In FY17, DCGS-N Increment 2 will begin integration and development of Fleet Capability Release-1 (FCR-1) which will center on integrating Maritime Domain Awareness capabilities into DCGS-N Increment 2. DCGS-N Increment 2 will award the DCGS-N Increment 2 Enterprise Integration contract to support the Government Integrator in the completion of FCR-1 and integration and development of FCR-2 and beyond. The program will begin efforts to include In Progress Test Review and Build Technical Review for a FCR-2 Build Decision in FY18.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: DCGS-N Increment 2	0.000	21.419	42.934	0.000	42.934
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<i>FY 2015 Accomplishments:</i> N/A					
<i>FY 2016 Plans:</i> DCGS-N Increment 2 to complete Joint Requirements Oversight Counsel (JROC) review and approval of the Information System Capability Development Document (IS CDD) and complete the Test and Evaluation Master Plan (TEMP) and other acquisition documentation needed to achieve Milestone B. Program will conduct engineering reviews in accordance with agile development methodologies and develop Fleet Capability Release-0 (FCR-0) in support of the Program Executive Officer, Command, Control, Communications, Computers and Intelligence (PEO C4I) prototype. DCGS-N Increment 2 will participate in a Development Request for Proposal (RFP) Decision Review and release the RFP in support of the development contract and begin FCR 1 development efforts.					
<i>FY 2017 Base Plans:</i> DCGS-N Increment 2 will begin integration and development of FCR-1 which will center on integrating Maritime Domain Awareness capabilities into DCGS-N Increment 2. Other development efforts include surface picture correlation with limited data sources, recognition of patterns from a track's history, automated collection target area prediction, high side track management. DCGS-N Increment 2 will award the DCGS-N Increment 2 Enterprise Integration contract to support the Government Integrator in the completion of FCR-1 and integration and development of FCR-2 and beyond. The DCGS-N Increment 2 Requirements Governance Board (DRGB) will meet to approve the Requirements Definition Package (RDP) for FCR-2. The program will begin efforts to include In Progress Test Review and Build Technical Review for a FCR-2 Build Decision in FY18					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.000	21.419	42.934	0.000	42.934

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0305208N/2914: <i>Distributed Common Ground System-Navy</i>	23.649	31.809	12.676	12.000	24.676	22.639	12.884	9.015	13.173	280.715	728.716

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

0305208N/2914 is a shared PE with DCGS-N Increment 1, Increment 2, and ICOP

D. Acquisition Strategy

The DCGS-N Increment 2 acquisition is based on the Department of Defense Instruction (DODI) 5000.02, Model 3, for incrementally fielded software intensive programs.

E. Performance Metrics

DCGS-N Increment 2 Goal: Support afloat forces through a robust enterprise Intelligence, Surveillance and Reconnaissance (ISR) capability, satisfying maritime needs for processing, exploitation, and dissemination.

DCGS-N Increment 2 Metric: Begin integration and development of Fleet Capability Release-1 (FCR-1).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>					Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hardware Development	C/CPFF	Unknown : Unknown	0.000	0.000		1.030	Mar 2016	2.305	Mar 2017	-		2.305	0.000	3.335	-
Primary Hardware Development	WR	SSC PAC : San Diego, CA	0.000	0.000		2.833	Oct 2015	6.343	Oct 2016	-		6.343	0.000	9.176	-
Software Development	WR	SSC PAC : San Diego, CA	0.000	0.000		8.723	Oct 2015	19.329	Oct 2016	-		19.329	0.000	28.052	-
Software Development	C/CPFF	Unknown : Unknown	0.000	0.000		3.929	Mar 2016	8.798	Mar 2017	-		8.798	201.482	214.209	-
Software Development	WR	SSC LANT : Charleston, SC	0.000	0.000		0.504	Oct 2015	1.131	Oct 2016	-		1.131	0.000	1.635	-
Government Technical Oversight (Dev)	WR	SSC LANT : Charleston, SC	0.000	0.000		0.126	Oct 2015	0.283	Oct 2016	-		0.283	0.000	0.409	-
Subtotal			0.000	0.000		17.145		38.189		-		38.189	201.482	256.816	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	C/CPFF	SETA SAIC : Columbia, MD	0.000	0.000		0.600	Dec 2015	0.688	Dec 2016	-		0.688	0.000	1.288	-
Development Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.150	Oct 2015	0.150	Oct 2016	-		0.150	13.622	13.922	-
Integrated Logistics Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.250	Oct 2015	0.250	Oct 2016	-		0.250	0.000	0.500	-
Integrated Logistics Support	C/CPFF	SETA SAIC : Columbia, MD	0.000	0.000		0.720	Dec 2015	0.825	Dec 2016	-		0.825	0.000	1.545	-
Subtotal			0.000	0.000		1.720		1.913		-		1.913	13.622	17.255	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	SSC LANT : Charleston, SC	0.000	0.000		0.250	Oct 2015	0.287	Oct 2016	-		0.287	15.416	15.953	-
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	0.000	0.000		0.800	Oct 2015	0.917	Oct 2016	-		0.917	0.000	1.717	-
Developmental Test & Evaluation	C/CPFF	COTF : Norfolk, VA	0.000	0.000		0.400	Nov 2015	0.459	Nov 2016	-		0.459	0.000	0.859	-
Subtotal			0.000	0.000		1.450		1.663		-		1.663	15.416	18.529	-

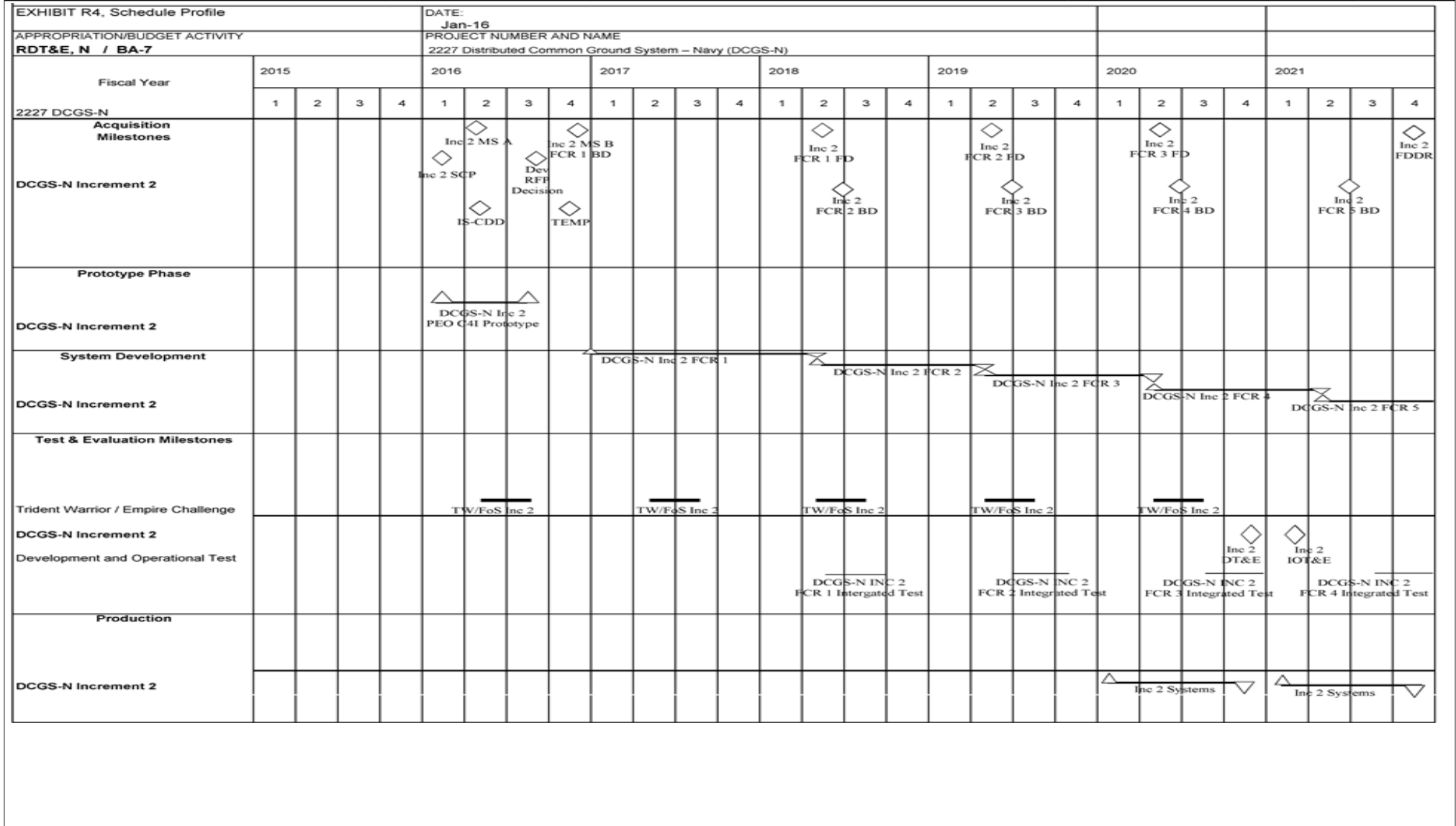
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	Allot	SPAWAR : San Diego, CA	0.000	0.000		0.180	Nov 2015	0.206	Nov 2016	-		0.206	0.000	0.386	-
Government Engineering Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.154	Nov 2015	0.154	Nov 2016	-		0.154	0.000	0.308	-
Program Management Support	C/CPFF	PSS BAH : San Diego, CA	0.000	0.000		0.270	Nov 2015	0.309	Nov 2016	-		0.309	0.000	0.579	-
Program Management Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.300	Oct 2015	0.300	Oct 2016	-		0.300	8.847	9.447	-
Program Management Support	WR	SSC PAC : San Diego, CA	0.000	0.000		0.200	Oct 2015	0.200	Oct 2016	-		0.200	0.000	0.400	-
Subtotal			0.000	0.000		1.104		1.169		-		1.169	8.847	11.120	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		0.000	0.000	21.419	42.934	-	42.934	239.367	303.720	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2227				
Trident Warrior/DCGS Family of Systems Inc 2 2016	2	2016	3	2016
Trident Warrior/DCGS Family of Systems Inc 2 2017	2	2017	3	2017
Trident Warrior/DCGS Family of Systems Inc 2 2018	2	2018	3	2018
Trident Warrior/DCGS Family of Systems Inc 2 2019	2	2019	3	2019
Trident Warrior/DCGS Family of Systems Inc 2 2020	2	2020	3	2020
DCGS-N Inc 2 FCR-1 Development	1	2017	2	2018
DCGS-N Inc 2 FCR-2 Development	2	2018	2	2019
DCGS-N Inc 2 FCR-3 Development	2	2019	2	2020
DCGS-N Inc 2 Release 1 Build Decision (MS B)	4	2016	4	2016
DCGS-N Inc 2 Procurement	1	2020	4	2021
DCGS-N Inc 2 FCR-1 Fielding Decision	2	2018	2	2018
DCGS-N Inc 2 FCR-2 Build Decision	2	2018	2	2018
DCGS-N Inc 2 FCR-3 Build Decision	2	2019	2	2019
DCGS-N Inc 2 IOT&E	1	2021	1	2021
DCGS-N Inc 2 FCR-2 Fielding Decision	2	2019	2	2019
DCGS-N Inc 2 FCR-3 Fielding Decision	2	2020	2	2020
DCGS-N Inc 2 FCR-0 PEO C4I Prototype	1	2016	3	2016
DCGS-N Inc 2 FCR-1 Integrated Test DT/OA	2	2018	3	2018
DCGS-N Inc 2 FCR-2 Integrated Test DT/OA	3	2019	4	2019
DCGS-N Inc 2 FCR-3 Integrated Test DT/OA	3	2020	4	2020
DCGS-N Inc 2 FCR-4 Development	2	2020	2	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305208N / <i>Distributed Common Ground Sys</i>	Project (Number/Name) 2227 / <i>Distributed Common Ground System (DCGS-N) Inc 2</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DCGS-N Inc 2 FCR-4 Build Decision	2	2020	2	2020
DCGS-N Inc 2 TEMP	4	2016	4	2016
DCGS-N Inc 2 IS-CDD	2	2016	2	2016
DCGS-N Inc 2 DEV RFP Decision	3	2016	3	2016
DCGS-N Inc 2 SCP	1	2016	1	2016
DCGS-N Inc 2 FDDR	4	2021	4	2021
DCGS-N Inc 2 FCR-5 Build Decision	2	2021	2	2021
DCGS-N Inc 2 FCR-5 Development	2	2021	4	2021
DCGS-N Inc 2 MS A	2	2016	2	2016
DCGS-N Inc 2 DT&E	4	2020	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305220N I (U)MQ-4C Triton
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	2,500.285	419.242	227.118	111.729	-	111.729	9.021	2.061	0.000	0.000	0.000	3,269.456
4020: MQ-4C TRITON	2,500.285	419.242	227.118	111.729	-	111.729	9.021	2.061	0.000	0.000	0.000	3,269.456

Program MDAP/MAIS Code: 373

Note

MQ-4C Triton RDTE funding for modernization was segregated into a new program element (from PE 0305220N to PE 0305421N) in order to satisfy Congressional direction for increased transparency.

A. Mission Description and Budget Item Justification

MQ-4C Triton Unmanned Air System (UAS). The popular name Triton was approved for the MQ-4C UAS in June 2012, designating the RQ-4 Broad Area Maritime Surveillance (BAMS) UAS as the MQ-4C Triton.

The MQ-4C Triton is a high altitude-long endurance UAS designed to provide Fleet and combatant commanders with persistent maritime Intelligence, Surveillance and Reconnaissance (ISR) of nearly all the world's high-density sea-lanes, littorals, and areas of national interest. Teamed with its manned-capability counterpart, the P-8A, Triton will be a key component of the Navy's family of systems to achieve maritime domain awareness. MQ-4C Triton will seek to leverage Maritime Patrol and Reconnaissance Force manpower, training and maintenance efficiencies.

The MQ-4C Triton features sensors designed to provide near worldwide coverage through a network of five orbits inside and outside continental United States, with sufficient air vehicles to remain airborne for 24 hours a day, 7 days a week, out to ranges of 2000 nautical miles. Onboard sensors will provide detection, classification, tracking and identification of maritime targets and include maritime radar, electro-optical/infra-red and Electronic Support Measures systems. Additionally, the MQ-4C will have a communications relay capability designed to link dispersed forces in the theater of operations and serve as a node in the Navy's FORCEnet strategy. Tactical-level data analysis will occur in real-time at shore-based mission control sites connected to the air vehicle via satellite communications. Further intelligence exploitation can be conducted at Fleet shore-based sites or aboard aircraft carriers and other ships.

The MQ-4C Triton UAS will implement phased capability upgrades within the ongoing acquisition program to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent ISR dominance through the system's lifecycle, and to support the Intelligence, Surveillance, Reconnaissance and Targeting transition plan. System upgrades will include Multi-Intelligence capabilities, Counter Electronic Attack upgrades, a more robust electronic support capability and continue improvements to baseline mission system payloads.

MQ-4C will play a significant role in the Sea Shield and FORCEnet pillars of Sea Power 21. In its Sea Shield role, the system will rely on its key attribute of persistence to provide the supported combatant command or fleet commander with unparalleled situational awareness of the maritime battle space as it develops and sustains the common operational tactical picture. The system will also serve as a Fleet response plan enabler, while acting as a trip wire for intelligence preparation of the

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305220N I (U)MQ-4C Triton
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environment. Additionally, Triton UAS will be a FORCEnet enabler and relay platform, directly connected to both the Global Information Grid and the Distributed Common Ground System-Navy information backbone.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	451.442	227.188	5.208	-	5.208
Current President's Budget	419.242	227.118	111.729	-	111.729
Total Adjustments	-32.200	-0.070	106.521	-	106.521
• Congressional General Reductions	-	-0.070			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-32.200	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	110.700	-	110.700
• Rate/Misc Adjustments	0.000	0.000	-4.179	-	-4.179

Change Summary Explanation

Decrease in MQ-4C by \$4.691M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

FY 2017 increase primarily due to Air to Air Radar Subsystem development.

Technical: N/A

Schedule: Multi-INT Follow-on Operational Test and Evaluation scheduled for 3QFY20, Multi-INT IOC scheduled for 2QFY21, and Future Development scheduled 4QFY20 through FY21 have been added to the schedule.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton				Project (Number/Name) 4020 / MQ-4C TRITON			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
4020: MQ-4C TRITON	2,500.285	419.242	227.118	111.729	-	111.729	9.021	2.061	0.000	0.000	0.000	3,269.456
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MQ-4C Triton Unmanned Air System (UAS). The MQ-4C Triton is a high altitude-long endurance UAS designed to provide Fleet and combatant commanders with persistent maritime Intelligence, Surveillance and Reconnaissance (ISR) of nearly all the world's high-density sea-lanes, littorals, and areas of national interest. Teamed with its manned-capability counterpart, the P-8A, Triton will be a key component of the Navy's family of systems to achieve maritime domain awareness. MQ-4C Triton will seek to leverage Maritime Patrol and Reconnaissance Force manpower, training and maintenance efficiencies.

The MQ-4C Triton features sensors designed to provide near worldwide coverage through a network of five orbits inside and outside continental United States, with sufficient air vehicles to remain airborne for 24 hours a day, 7 days a week, out to ranges of 2000 nautical miles. Onboard sensors will provide detection, classification, tracking and identification of maritime targets and include maritime radar, electro-optical/infra-red and Electronic Support Measures systems. Additionally, the MQ-4C will have a communications relay capability designed to link dispersed forces in the theater of operations and serve as a node in the Navy's FORCEnet strategy. Tactical-level data analysis will occur in real-time at shore-based mission control sites connected to the air vehicle via satellite communications. Further intelligence exploitation can be conducted at Fleet shore-based sites or aboard aircraft carriers and other ships.

The MQ-4C Triton UAS will implement phased capability upgrades within the ongoing acquisition program to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent ISR dominance through the system's lifecycle, and to support the OPNAV N2/N6 Intelligence, Surveillance, Reconnaissance and Targeting transition plan. System upgrades will include Multi-Intelligence capabilities, Counter Electronic Attack upgrades, a more robust electronic support capability and continue improvements to baseline mission system payloads.

MQ-4C will play a significant role in the Sea Shield and FORCEnet pillars of Sea Power 21. In its Sea Shield role, the system will rely on its key attribute of persistence to provide the supported combatant command or fleet commander with unparalleled situational awareness of the maritime battle space as it develops and sustains the common operational tactical picture. The system will also serve as a Fleet response plan enabler, while acting as a trip wire for intelligence preparation of the environment. Additionally, Triton UAS will be a FORCEnet enabler and relay platform, directly connected to both the Global Information Grid and the Distributed Common Ground System-Navy information backbone.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	367.881	185.594	82.657	0.000	82.657
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Awarded contract in FY08 to initiate the MQ-4C Triton System Development and Demonstration phase effort. The Prime Contractor is responsible for overall system development and performance, as well as associated management, engineering and logistics activities.</p> <p>FY 2015 Accomplishments: Continue System Development and Demonstration (SDD) and build of two System Demonstration Test Article (SDTA) vehicles.</p> <p>FY 2016 Plans: Continue SDD and build of two SDTA vehicles. Funding decreases from FY15 to reflect a ramp down in baseline MQ-4C Triton SDD development efforts in accordance with the program schedule.</p> <p>FY 2017 Base Plans: Continue SDD and delivery of two SDTA vehicles. Funding decreases from FY16 to reflect a ramp down in baseline MQ-4C Triton SDD development efforts in accordance with the program schedule.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: ILS, Support, Studies & Analysis</p> <p align="right">Articles:</p> <p>Description: Integrated Logistics Support, Studies and Analysis.</p> <p>FY 2015 Accomplishments: Continue integrated logistics support, technical engineering services, sensor risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton Unmanned Air System (UAS) capabilities.</p> <p>FY 2016 Plans: Continue integrated logistics support, technical engineering services, sensor risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton UAS capabilities.</p> <p>FY 2017 Base Plans:</p>	13.079	9.916	4.398	0.000	4.398
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Continue integrated logistics support, technical engineering services, sensor risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton UAS capabilities.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Test & Evaluation (T&E)</p> <p align="right">Articles:</p> <p>Description: T&E efforts.</p> <p>FY 2015 Accomplishments: Continue Developmental Testing (DT) and Operational Testing (OT) support activities to allow test and fielding of the MQ-4C Triton Unmanned Air System (UAS) in accordance with the program schedule.</p> <p>FY 2016 Plans: Continue DT and OT support activities to allow test and fielding of the MQ-4C Triton UAS in accordance with the program schedule.</p> <p>FY 2017 Base Plans: Continue DT and OT support activities to allow test and fielding of the MQ-4C Triton UAS in accordance with the program schedule.</p> <p>FY 2017 OCO Plans: N/A</p>	33.080	28.744	23.301	0.000	23.301
	-	-	-	-	-
<p>Title: Program Management (PM)</p> <p align="right">Articles:</p> <p>Description: PM support and travel.</p> <p>FY 2015 Accomplishments: Continue the following: PM support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability</p>	5.202	2.864	1.373	0.000	1.373
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts. FY 2016 Plans: Continue the following: PM support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts. FY 2017 Base Plans: Continue the following: PM support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	419.242	227.118	111.729	0.000	111.729

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN-4/044200: RQ-4 UAV (Triton UAV)	67.670	619.662	464.657	-	464.657	570.239	685.950	759.853	748.865	6,569.316	10,486.212
• MILCON/0212176N: Facilities New Footprint - Fleet Ops	0.000	8.296	30.475	-	30.475	0.000	0.000	0.000	0.000	0.000	88.385

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN-6/044200: RQ-4 UAV (Triton UAV)	0.000	103.954	114.529	-	114.529	101.659	8.566	9.345	0.000	78.847	416.900
• MILCON/0712876N: Facilities New Footprint - Main and Prod	0.000	40.641	0.000	-	0.000	0.000	27.686	0.000	0.000	0.000	68.327
• RDT&E/0305421N: (U)RQ-4 Modernization	30.000	129.892	181.266	-	181.266	166.651	85.234	43.601	44.538	0.000	681.182
• MILCON/0815976N: Facilities New Footprint - Training	0.000	0.000	41.380	-	41.380	0.000	0.000	0.000	0.000	0.000	41.380
• OMN/1D4D: Weapons Maintenance	0.000	0.000	0.000	-	0.000	29.667	32.365	34.809	35.522	Continuing	Continuing
• OMN/1A4N: Air Systems Support	0.000	0.000	0.000	-	0.000	0.496	0.495	0.495	0.496	Continuing	Continuing
• OMN/1A1A: Mission and Other Flight Operations	0.000	0.000	0.000	-	0.000	2.193	13.990	34.265	192.313	Continuing	Continuing
• MILCON/0805976N: Facilities Restoration and Mod-Training	0.000	2.974	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.974

Remarks

In order to reflect the correct funding profile, the APN-4 "Cost To Complete" should read \$6,595.833 for a total cost of \$10,512.729. The APN-6 "Cost To Complete" should read \$90.500 for a total of \$428.553.

D. Acquisition Strategy

The MQ-4C Triton acquisition approach encompasses delivery of detection, tracking, imaging and data dissemination capabilities at Initial Operational Capability (IOC) with activities to enhance sensor and system performance via phased capability upgrades for post IOC delivery as part of the Triton acquisition program. This approach of phased capability upgrades within the acquisition program enables MQ-4C to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent Intelligence, Surveillance and Reconnaissance dominance through the system's lifecycle.

The MQ-4C Triton program office is pursuing joint efficiency with the Air Force on the Global Hawk Unmanned Aircraft System (UAS). However, the integration of the Triton UAS into the Maritime Patrol Reconnaissance Force and the unique maritime sensors employed dictate a Navy-led acquisition program focused on joint efficiencies, where possible.

E. Performance Metrics

Successfully achieve Milestone C, Integrated Test, Operational Evaluation and IOC.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	C/CPIF	Northrop Grumman : Rancho Bernardo, CA	2,109.453	319.074	Nov 2014	152.066	Jan 2016	61.090	Nov 2016	-		61.090	0.000	2,641.683	2,641.683
Systems Engineering	Various	Various : Various	9.881	4.536	Nov 2014	2.375	Nov 2015	1.276	Nov 2016	-		1.276	0.000	18.068	-
Systems Engineering	WR	NAWC-AD : Patuxent River, MD	159.538	40.808	Nov 2014	28.323	Nov 2015	18.284	Nov 2016	-		18.284	2.150	249.103	-
Systems Engineering	WR	NAWC-WD : China Lake, CA	8.420	2.040	Nov 2014	1.393	Nov 2015	0.527	Nov 2016	-		0.527	0.000	12.380	-
Contractor Engineering	C/CPFF	Mitre : Mclean, VA	1.416	1.423	Nov 2014	1.437	Nov 2015	1.480	Nov 2016	-		1.480	0.000	5.756	5.756
Prior Year Prod Dev no longer in the FYDP	Various	Various : Various	24.553	0.000		0.000		0.000		-		0.000	0.000	24.553	-
Subtotal			2,313.261	367.881		185.594		82.657		-		82.657	2.150	2,951.543	-

Remarks
The Primary Hardware Development line resources Northrop Grumman for prime contractor activities, which include System Development and Demonstration (SDD) and System Demonstration Test Article (SDTA) vehicles.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	Various	Various : Various	16.236	2.268	Nov 2014	1.590	Nov 2015	0.601	Nov 2016	-		0.601	0.000	20.695	-
Integrated Logistics Support	Various	Various : Various	6.224	1.619	Nov 2014	1.021	Nov 2015	0.413	Nov 2016	-		0.413	0.000	9.277	-
Integrated Logistics Support	WR	NAWC-AD : Patuxent River, MD	29.354	9.192	Nov 2014	7.305	Nov 2015	3.384	Nov 2016	-		3.384	1.182	50.417	-
Integrated Logistics Support	WR	NAWC-TSD : Orlando, FL	4.612	0.000		0.000		0.000		-		0.000	0.000	4.612	-
Prior year cost no longer funded in the FYDP	Various	Various : Various	10.784	0.000		0.000		0.000		-		0.000	0.000	10.784	-
Subtotal			67.210	13.079		9.916		4.398		-		4.398	1.182	95.785	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	Various	Various : Various	15.745	1.636	Nov 2014	0.668	Nov 2015	0.681	Nov 2016	-		0.681	0.000	18.730	-
Developmental Test & Evaluation	WR	NAWC-AD : Patuxent River, MD	67.696	27.189	Nov 2014	23.736	Nov 2015	18.238	Nov 2016	-		18.238	1.352	138.211	-
Operational Test & Evaluation	Various	Various : Various	0.646	1.655	Nov 2014	1.688	Nov 2015	3.382	Nov 2016	-		3.382	5.004	12.375	-
Developmental Test & Evaluation (SATCOMM)	MIPR	DITCO : Various	7.242	2.600	Nov 2014	2.652	Nov 2015	1.000	Nov 2016	-		1.000	0.605	14.099	-
Subtotal			91.329	33.080		28.744		23.301		-		23.301	6.961	183.415	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Various : Various	3.264	0.320	Nov 2014	0.163	Nov 2015	0.166	Nov 2016	-		0.166	0.058	3.971	-
Travel	Allot	Various : Various	1.382	0.146	Nov 2014	0.119	Nov 2015	0.107	Nov 2016	-		0.107	0.065	1.819	-
Program Management Support	C/CPFF	Ausley : Lexington Park, MD	18.831	4.736	Nov 2014	2.582	Nov 2015	1.100	Nov 2016	-		1.100	0.666	27.915	27.915
Prior year cost no longer funded in the FYDP	Various	Various : Various	5.008	0.000		0.000		0.000		-		0.000	0.000	5.008	5.008
Subtotal			28.485	5.202		2.864		1.373		-		1.373	0.789	38.713	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		2,500.285	419.242	227.118	111.729	-	111.729	11.082	3,269.456	-

Remarks
Prior to FY10, MQ-4C Triton, formerly known as RQ-4 Broad Area Maritime Surveillance (BAMS), was budgeted for in PE 0305205N: Endurance Unmanned Aer Veh.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 4020				
Acquisition Milestones: Milestone C	2	2016	2	2016
Acquisition Milestones: Full Rate Production	2	2018	2	2018
Acquisition Milestones: Initial Operational Capability	3	2018	3	2018
Acquisition Milestones: Multi-INT Initial Operational Capability	2	2021	2	2021
System Development: System Development and Demonstration	1	2015	4	2021
System Development: Phased Capability Upgrades - Multi-INT	2	2015	3	2020
System Development: Future Development	4	2020	4	2021
Test & Evaluation Activities: Integrated Test (Combined/Developmental/Operational)	1	2015	4	2017
Test & Evaluation Activities: Follow-on Integrated Test	4	2018	2	2020
Test & Evaluation Activities: Multi-INT Follow-on Operational Test and Evaluation	3	2020	3	2020
Test & Evaluation Activities: Operational Test Readiness Review	1	2018	1	2018
Test & Evaluation Activities: OPEVAL	2	2018	3	2018
Production Milestones: Contracts: Low Rate Initial Production 1 Contract Award	2	2016	2	2016
Production Milestones: Contracts: Low Rate Initial Production 2 Contract Award	2	2017	2	2017
Production Milestones: Contracts: Full Rate Production Lot 3 Contract Award	2	2018	2	2018
Production Milestones: Contracts: Full Rate Production Lot 4 Contract Award	2	2019	2	2019
Production Milestones: Contracts: Full Rate Production Lot 5 Contract Award	2	2020	2	2020
Production Milestones: Contracts: Full Rate Production Lot 6 Contract Award	2	2021	2	2021
Production Milestones: Deliveries: System Demonstration Test Articles Delivery	1	2017	2	2017
Production Milestones: Deliveries: Low Rate Initial Production Lot 1 Delivery	2	2018	1	2019
Production Milestones: Deliveries: Low Rate Initial Production Lot 2 Delivery	2	2019	1	2020
Production Milestones: Deliveries: Full Rate Production Lot 3 Delivery	2	2020	1	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305220N / (U)MQ-4C Triton	Project (Number/Name) 4020 / MQ-4C TRITON
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Deliveries: Full Rate Production Lot 4 Delivery	2	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	352.042	43.294	52.770	26.518	-	26.518	10.902	6.172	6.352	6.492	26.800	531.342
2768: <i>MQ-8 Fire Scout</i>	352.042	43.294	52.770	26.518	-	26.518	10.902	6.172	6.352	6.492	26.800	531.342

Program MDAP/MAIS Code: 253

A. Mission Description and Budget Item Justification

The MQ-8 Unmanned Air System is a Joint Military Intelligence Program.

The MQ-8 Unmanned Air System is popularly known as "Fire Scout". The Department conducted a Title 10 Section 2433 (Nunn-McCurdy Breach) review on the MQ-8 program in 2014 due to a unit cost breach and certified a restructured program to Congress on 16 June 2014. The restructured program includes MQ-8B air vehicles procured under the original program of record (POR), MQ-8C air vehicles (Endurance Upgrade) procured under the Department of the Navy's Rapid Deployment Capability (RDC) procurement process, and an additional 21 MQ-8C air vehicles to be procured to complete the program Fleet requirements of 70 air vehicles (61 procurement and 9 RDT&EN / 30 MQ-8Bs and 40 MQ-8Cs), and associated Mission Control Systems (MCS), Unmanned Aerial Vehicle Common Automatic Recovery Systems (UCARS) and support equipment. In addition to the air vehicles, Radar and Weapons capabilities were developed under the Navy's RDC authorities. All acquisition actions previously planned under the RDCs have transitioned into the restructured POR.

The MQ-8B-based system achieved Milestone C (MS C) in May 2007. The Nunn-McCurdy certification process revoked the program's MS C approval. MS C for the restructured MQ-8 program is currently scheduled in the 3QFY16.

The MQ-8 System provides real-time and non-real-time Intelligence, Surveillance and Reconnaissance (ISR) data to tactical users without the use of manned aircraft or reliance on limited joint theater or national assets. The baseline MQ-8 can accomplish missions including over-the-horizon tactical reconnaissance, classification, targeting and laser designation and battle damage assessment (including voice communications relay).

The MQ-8 launches and recovers vertically, and can operate from suitably-equipped air capable ships, as well as confined area land bases. Interoperability is achieved through the use of the Tactical Control System (TCS) software in the MCS, also referred to as a Ground Control Station (GCS), and through the use of the Tactical Common Data Link (TCDL). The data from the MQ-8 is provided through standard DoD Command, Control, Communications, Computers and ISR (C4ISR) system architectures and protocols.

A deployed MQ-8 system includes of air vehicle(s), payloads (i.e. electro-optical/infrared/laser designator-range finder, Automated Identification System, voice communications relay, Radar, Weapons, and other specialty payloads), MCS (with TCS and TC DL integrated for interoperability), a UCARS for automatic launch and recovery, and associated spares and support equipment. The schedules for MCS and UCARS components are based on host ship requirements, while schedules for air vehicle components, support equipment, and training equipment are based on operational deployment plans. A limited number of land-based mission control systems supplement the shipboard systems to support shore-based operations, such as pre-deployment or acceptance functional check flights. These land-based mission control

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV
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stations will also support depot-level maintenance/post-maintenance activities. The MQ-8C provides additional mission endurance and payload-weight-power, increased reliability, and improved maintainability to the MQ-8 Fire Scout System. MQ-8 systems will support missions on Littoral Combat Ship (LCS) and/or suitably-equipped air capable ships. Quantities of air vehicles are derived from LCS and/or suitably-equipped air capable ship deployment requirements for Surface Warfare and Mine Countermeasures mission sets.

The MQ-8 Radar capability is the initial effort as part of the Surface Warfare (SUW) Increment of the MQ-8C. A maritime Radar will be competitively selected for integration into the MQ-8C Fire Scout System. This system will provide the MQ-8 operators and the supported LCS crew enhanced situational awareness of the Recognized Maritime Picture (RMP) by providing surface search, track, Inverse Synthetic Aperture Radar (ISAR) maritime target classification, and Synthetic Aperture Radar (SAR) target classification capabilities. The maritime Radar will be fully integrated with the MCS and ship's combat systems providing data in standardized format for ease of dissemination to other users.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	43.294	52.770	33.024	-	33.024
Current President's Budget	43.294	52.770	26.518	-	26.518
Total Adjustments	0.000	0.000	-6.506	-	-6.506
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-6.506	-	-6.506

Change Summary Explanation

Decrease in MQ-8 UAV by \$1.334M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

The FY 2017 funding request was reduced by \$4.848M to account for the availability of prior year execution balances.

Technical: FYDP funds support the MQ-8C and Radar development, and studies on Weapons and future payloads. Future payload efforts will be considered when developing current efforts.

Schedule:

Updated Milestone C decision and other milestones to align to the restructured MQ-8 program.

Updated Radar capability contract awards and reviews to align to the restructured MQ-8 program.

Updated production and delivery schedules for current and out-year procurements to align to the restructured MQ-8 program.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV				Project (Number/Name) 2768 / MQ-8 Fire Scout			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2768: MQ-8 Fire Scout	352.042	43.294	52.770	26.518	-	26.518	10.902	6.172	6.352	6.492	26.800	531.342
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department conducted a Title 10 Section 2433 (Nunn-McCurdy Breach) review on the MQ-8 program in 2014 due to a unit cost breach and certified a restructured program to Congress on 16 June 2014. The restructured program includes MQ-8B air vehicles procured under the original program of record (POR), MQ-8C air vehicles (Endurance Upgrade) procured under the Department of the Navy's Rapid Deployment Capability (RDC) procurement process, and an additional 21 MQ-8C air vehicles to be procured to complete the program Fleet requirements of 70 air vehicles (61 procurement and 9 RDT&EN / 30 MQ-8Bs and 40 MQ-8Cs), and associated Mission Control Systems (MCS), Unmanned Aerial Vehicle Common Automatic Recovery Systems (UCARS) and support equipment. In addition to the air vehicles, Radar and Weapons capabilities were developed under the Navy's RDC authorities. All acquisition actions previously planned under the RDCs have transitioned into the restructured POR.

The MQ-8B-based system achieved Milestone C (MS C) in May 2007. The Nunn-McCurdy certification process revoked the program's MS C approval. MS C for the restructured MQ-8 program is currently scheduled in the 3QFY16.

The MQ-8 System provides real-time and non-real-time Intelligence, Surveillance and Reconnaissance (ISR) data to tactical users without the use of manned aircraft or reliance on limited joint theater or national assets. The baseline MQ-8 can accomplish missions including over-the-horizon tactical reconnaissance, classification, targeting and laser designation and battle damage assessment (including voice communications relay).

The MQ-8 launches and recovers vertically, and can operate from suitably-equipped air capable ships, as well as confined area land bases. Interoperability is achieved through the use of the Tactical Control System (TCS) software in the MCS, also referred to as a Ground Control Station (GCS), and through the use of the Tactical Common Data Link (TCDL). The data from the MQ-8 is provided through standard DoD Command, Control, Communications, Computers and ISR (C4ISR) system architectures and protocols.

A deployed MQ-8 system includes of air vehicle(s), payloads (i.e. electro-optical/infrared/laser designator-range finder, Automated Identification System, voice communications relay, Radar, Weapons, and other specialty payloads), MCS (with TCS and TC DL integrated for interoperability), a UCARS for automatic launch and recovery, and associated spares and support equipment. The schedules for MCS and UCARS components are based on host ship requirements, while schedules for air vehicle components, support equipment, and training equipment are based on operational deployment plans. A limited number of land-based mission control systems supplement the shipboard systems to support shore-based operations, such as pre-deployment or acceptance functional check flights. These land-based mission control stations will also support depot-level maintenance/post-maintenance activities. The MQ-8C provides additional mission endurance and payload-weight-power, increased reliability, and improved maintainability to the MQ-8 Fire Scout System.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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MQ-8 systems will support missions on Littoral Combat Ship (LCS) and/or suitably-equipped air capable ships. Quantities of air vehicles are derived from LCS and/or suitably-equipped air capable ship deployment requirements for Surface Warfare and Mine Countermeasures mission sets. FYDP funds support the completion of MQ-8C and Radar development, and studies on Weapons and future payloads. Future payload efforts will be considered when developing current efforts.

The MQ-8 Radar capability is the initial effort as part of the Surface Warfare (SUW) Increment of the MQ-8C. A maritime Radar will be competitively selected for integration into the MQ-8C Fire Scout System. This system will provide the MQ-8 operators and the supported LCS crew enhanced situational awareness of the Recognized Maritime Picture (RMP) by providing surface search, track, Inverse Synthetic Aperture Radar (ISAR) maritime target classification, and Synthetic Aperture Radar (SAR) target classification capabilities. The maritime Radar will be fully integrated with the MCS and ship's combat systems providing data in standardized format for ease of dissemination to other users.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Hardware and System Development</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments: Continued MQ-8C hardware, software modifications, and other payload integration. Continued MQ-8 integration and testing on Littoral Combat Ship (LCS). Corrected deficiencies from MQ-8C and MQ-8B. Initiated MQ-8C Endurance Upgrade and Radar capabilities into the Program of Record.</p> <p>FY 2016 Plans: Continue MQ-8C hardware, software modifications, and other payload integration. Continue MQ-8 integration and testing on LCS. Continue MQ-8C Endurance Upgrade and Radar development. Continue MQ-8B FOT&E.</p> <p>FY 2017 Base Plans: Continue MQ-8C hardware, software modifications, and other payload integration. Continue MQ-8 integration and testing on LCS. Continue integration of the selected Radar with the MQ-8C Air Vehicle and MCS. Complete qualification of the selected Radar for the MQ-8C operational environment. Complete System Integration Lab testing of the software build for the maritime Radar integration. Continue MQ-8B FOT&E.</p> <p>FY 2017 OCO Plans: N/A</p>	29.130	41.450	11.275	0.000	11.275
	-	-	-	-	-
<p>Title: Development/Operational Testing</p> <p align="right">Articles:</p> <p>FY 2015 Accomplishments:</p>	3.864	2.300	7.436	0.000	7.436
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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Continued MQ-8C testing and initiate LCS integration. Completed MQ-8B Radar testing. Continued other payload integration and testing. Initiated development testing for MQ-8C Radar, Weapons, and other payload capabilities. Initiated Initial Operational Test and Evaluation (IOT&E) for MQ-8C air vehicle.

FY 2016 Plans:

Continue Dynamic Interface testing of MQ-8C on both classes of LCS. Complete MQ-8C Endurance Upgrade developmental testing. Continue IOT&E testing of MQ-8C on LCS. Continue other payload integration and testing. Continue MQ-8B FOT&E.

FY 2017 Base Plans:

Complete Dynamic Interface testing of MQ-8C on both classes of Littoral Combat Ship (LCS). Continue MQ-8C developmental testing of hardware and software modifications and planning for the other payload integration. Complete Operational Test and Evaluation testing of MQ-8C on LCS. Start Developmental Testing of the maritime Radar on the MQ-8C Air Vehicle. Continue MQ-8B FOT&E.

FY 2017 OCO Plans:

N/A

Title: Engineering and Technical Services

Articles:

10.300	9.020	7.807	0.000	7.807
-	-	-	-	-

FY 2015 Accomplishments:

Continued engineering, program technical management, and logistics support. Continued acquisition planning to transition the MQ-8C, Radar, and Weapons capabilities into the Program of Record. Continued Radar, Weapons, other payloads, LCS capabilities payloads, and system studies and design.

FY 2016 Plans:

Continue engineering, program technical management, and logistics support. Continue acquisition planning and execution to transition the MQ-8C, Radar, and Weapons capabilities. Continue Radar, Weapons, other payloads, LCS capabilities payloads, and system studies and design. Continue MQ-8B FOT&E.

FY 2017 Base Plans:

Continue engineering, program technical management, logistics support of the MQ-8C. Continue acquisition planning and execution to transition the Radar, and Weapons capabilities. Continue Radar, Weapons, other payloads, LCS integration, and system studies and design. Continue MQ-8B FOT&E.

FY 2017 OCO Plans:

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	43.294	52.770	26.518	0.000	26.518

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN, 044300: MQ-8 UAV	109.663	163.680	72.435	-	72.435	90.846	97.797	87.814	84.795	168.973	1,570.747
• APN, 060510: MQ-8 UAV Spares	12.573	0.000	1.506	-	1.506	1.634	4.831	3.111	0.604	0.503	125.142
• APN, 058800: MQ-8 Series	8.741	16.304	19.003	-	19.003	9.311	5.189	5.300	5.403	96.969	166.220

Remarks

D. Acquisition Strategy

The Navy is updating our acquisition strategy to restructure the MQ-8 Fire Scout program and capitalize on prior Rapid Deployment Capability efforts, while leveraging existing program investments. The updated acquisition strategy will maintain commonality of MQ-8B and MQ-8C systems, payloads, avionics, software, and ancillary equipment where possible. The acquisition strategy will support the revised Capability Production Document. Initial Operational Capability (IOC) of an MQ-8B-based system was achieved in 2QFY14 while IOC of an MQ-8C-based system onboard LCS is anticipated in 3QFY18. The maritime Radar will be competitively selected. The integration effort will require sole source contracts to the current prime original equipment manufacturers (OEMs) for the Tactical Control System and the MQ-8 Fire Scout air vehicle.

E. Performance Metrics

Successfully provide an MQ-8C air vehicle that supports operational deployments. Successfully provide a Radar capability for operational deployments. Successfully achieve Littoral Combat Ship integration.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development (MQ-8)	C/CPIF	Northrop Grumman Corp : San Diego, CA	246.164	22.146	Nov 2014	35.450	Nov 2015	9.317	Nov 2016	-		9.317	18.230	331.307	331.307
Primary Hardware Development (MQ-8)	C/CPIF	Raytheon Corp : Falls Church, VA	16.251	2.000	Nov 2014	3.000	Nov 2015	1.958	Nov 2016	-		1.958	5.400	28.609	28.609
Primary Hardware Development(RADAR OEM)	C/CPIF	TBD : TBD	0.000	4.984	Sep 2015	3.000	Nov 2015	0.000		-		0.000	0.000	7.984	7.984
Subtotal			262.415	29.130		41.450		11.275		-		11.275	23.630	367.900	367.900

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Various	6.077	0.000		0.000		0.000		-		0.000	1.700	7.777	-
Subtotal			6.077	0.000		0.000		0.000		-		0.000	1.700	7.777	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	NAWCAD : PAXRV, MD	14.471	0.739	Nov 2014	0.320	Feb 2016	2.386	Nov 2016	-		2.386	2.200	20.116	-
Operational Test & Evaluation/QRA	WR	NAWCWD : CHINALK, CA	3.931	3.125	Nov 2014	1.980	Feb 2016	5.050	Mar 2017	-		5.050	1.900	15.986	-
Prior Years T&E no longer funded in the FYDP	Various	Various : Various	0.342	0.000		0.000		0.000		-		0.000	0.000	0.342	-
Subtotal			18.744	3.864		2.300		7.436		-		7.436	4.100	36.444	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	WR	NAWCAD : PAXRV, MD	49.801	6.791	Nov 2014	5.600	Nov 2015	4.695	Nov 2016	-		4.695	11.100	77.987	-
Program Management Support	Various	Various : Various	11.571	3.293	Nov 2014	3.100	Nov 2015	2.787	Nov 2016	-		2.787	9.700	30.451	-
Travel	WR	NAVAIR : PAXRV, MD	1.133	0.216	Nov 2014	0.320	Nov 2015	0.325	Nov 2016	-		0.325	1.540	3.534	-
Prior years Mgmt Svcs no longer funded in the FYDP	Various	Various : Various	2.301	0.000		0.000		0.000		-		0.000	0.000	2.301	-
Subtotal			64.806	10.300		9.020		7.807		-		7.807	22.340	114.273	-

Remarks

Travel contract type is TO.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	352.042	43.294	52.770	26.518	-	26.518	51.770	526.394	-

Remarks

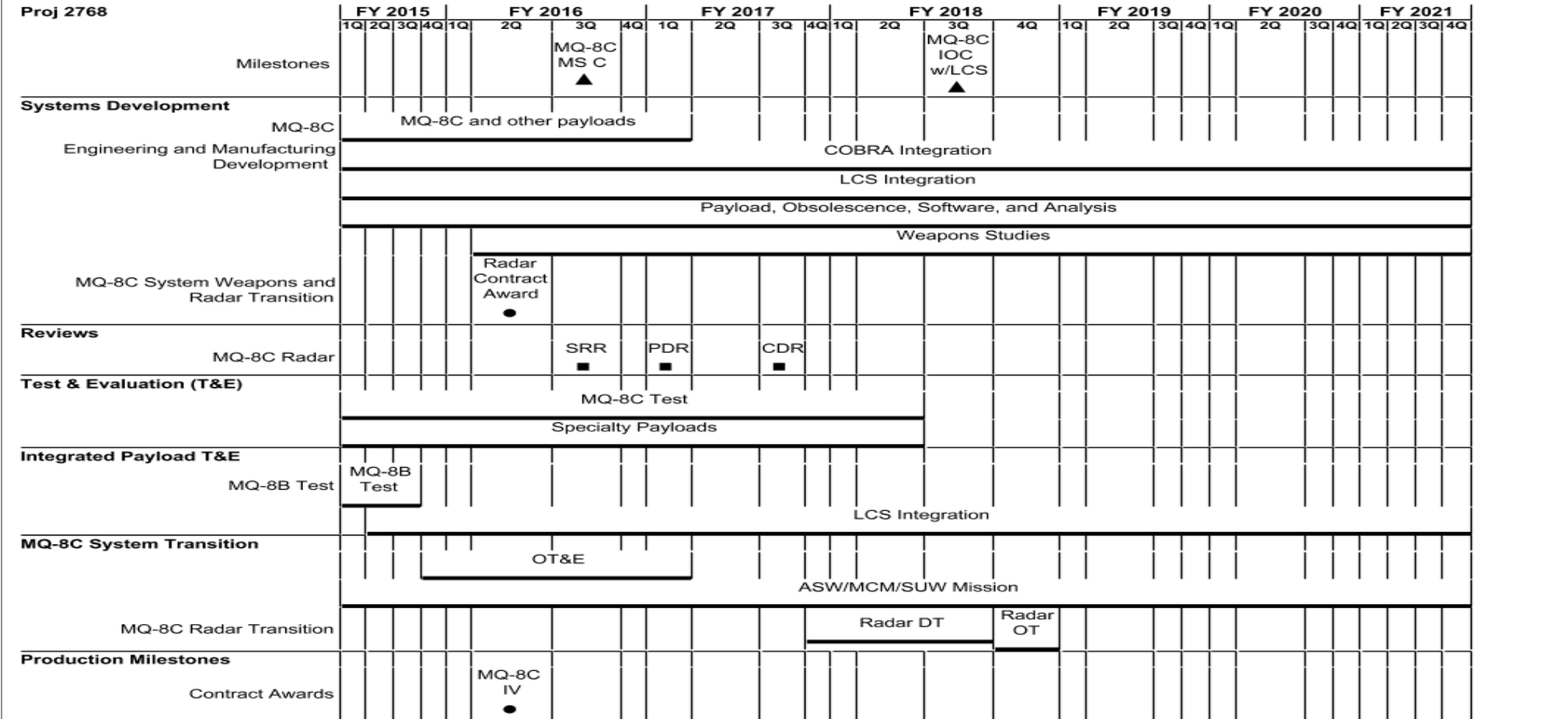
DT&E Team transitioning from contractor to government.

OT&E includes MQ-8C IOT&E.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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	MQ-8C V	MQ-8C VI	MQ-8C VII	MQ-8C VIII	MQ-8C IX										
2017PB - 0305231N - 2768	●	●	●	●	●										

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2768				
Milestones: MQ-8 Initial Operational Capability (IOC) - MQ-8C Littoral Combat Ship (LCS)	3	2018	3	2018
Milestones: MQ-8C Milestone C Decision	3	2016	3	2016
Systems Development: MQ-8C: MQ-8C and other payloads	1	2015	1	2017
Systems Development: Engineering and Manufacturing Development: Coastal Battlefield Reconnaissance and Analysis Integration (COBRA), BLK 1/2/3	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Littoral Combat Ship (LCS) Integration	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Payload, Obsolescence, Software, and Analysis	1	2015	4	2021
Systems Development: Engineering and Manufacturing Development: Weapons Studies	2	2016	4	2021
Systems Development: MQ-8C System Weapons and Radar Transition: Radar Contract Award	2	2016	2	2016
Reviews: MQ-8C Radar: System Requirements Review (SRR)	3	2016	3	2016
Reviews: MQ-8C Radar: Preliminary Design Review (PDR)	1	2017	1	2017
Reviews: MQ-8C Radar: Critical Design Review (CDR)	3	2017	3	2017
Test & Evaluation (T&E): MQ-8C Development Test	1	2015	2	2018
Test & Evaluation (T&E): Specialty Payloads	1	2015	2	2018
Integrated Payload T&E: MQ-8B Test: MQ-8B	1	2015	3	2015
Integrated Payload T&E: MQ-8B Test: Littoral Combat Ship (LCS) Integration	2	2015	4	2021
MQ-8C System Transition: Operational Test and Evaluation (OT&E)	4	2015	1	2017
MQ-8C System Transition: ASW/MCM/SUW Mission	1	2015	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305231N / MQ-8 UAV	Project (Number/Name) 2768 / MQ-8 Fire Scout
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MQ-8C System Transition: MQ-8C Radar Transition: Radar Developmental Test (DT)	4	2017	3	2018
MQ-8C System Transition: MQ-8C Radar Transition: Radar Operational Test (OT)	4	2018	4	2018
Production Milestones: Contract Awards: Air Vehicles MQ-8C IV	2	2016	2	2016
Production Milestones: Contract Awards: Air Vehicles MQ-8C V	2	2016	2	2016
Production Milestones: Contract Awards: Air Vehicles MQ-8C VI	2	2017	2	2017
Production Milestones: Contract Awards: Air Vehicles MQ-8C VII	2	2018	2	2018
Production Milestones: Contract Awards: Air Vehicles MQ-8C VIII	2	2019	2	2019
Production Milestones: Contract Awards: Air Vehicles MQ-8C IX	2	2020	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	2.125	0.682	0.635	0.418	-	0.418	1.510	0.515	0.501	0.512	Continuing	Continuing
2292: RQ-11 UAV	2.125	0.682	0.635	0.418	-	0.418	1.510	0.515	0.501	0.512	Continuing	Continuing

Note

Prior to FY2010 RQ-11 Unmanned Aerial Vehicle (UAV) was funded in PE 0206313M, project C2273.

The FY 2017 funding request was reduced by \$0.061 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The Small Unit Remote Scouting System (SURSS) - The SURSS program procures an unmanned aircraft system (UAS) to provide the company/detachment level with scalable airborne reconnaissance and surveillance to aid in detecting, identifying, engaging, or avoiding enemy units. In December of 2013 the Approved Acquisition Objective (AAO) for the SURSS program was changed to include the RQ-12 Wasp, RQ-11 Raven, and RQ-20 Puma as the material solutions for the Block 0, Block 1, and Block 2 requirements of the SURSS requirement document.

RQ-12 Wasp (Block 0) - Wasp is a small UAS consisting of 2 air vehicles and a Ground Control Station (GCS). The air vehicle has an overall length of 40 inches with a weight of approximately 2.25 pounds. The payload consists of a gimballed turret with Electro Optical/Infrared (EO/IR) sensor and uses an encrypted data link. It provides near real time reconnaissance required by the platoon and rifle squad which reduces the Intelligence, Surveillance, and Reconnaissance (ISR) request-to-response timeframe and eliminates delays or denials for coverage due to an imbalance of unmanned air systems to requests. Wasp is used for remote reconnaissance and surveillance, force protection, convoy security, target acquisition, and battle damage assessment. A Wasp system consists of two air vehicles, two GCSs, and one reconnaissance, surveillance, and target acquisition (RSTA) kit.

RQ-11 Raven (Block 1)- Raven is a five pound, hand launched, reusable vehicle with a span of 55 inches. The air vehicle flies at an altitude of 300-500 feet above ground level at a speed of approximately 35 knots and has a maximum duration of 90 minutes. Ravens interchangeable payloads, autopilot and propulsion system are commercial-off-the shelf (COTS) subsystems. The GCS uses a rugged hand controller connected to a communication control box. A Raven system consists of three air vehicles, two GCS, one RSTA kit and one field repair kit (FRK). The RSTA kit is used for mission planning, autonomous flight operations, and mission product archiving. The FRK contains consumable items used during operations and maintenance.

RQ-20 Puma (Block 2) - Puma is an all environment UAS system providing ISR to Route Clearance Platoons (RCP) and Combat Logistics Patrols (CLP). Puma allows RCPs and CLPs to scan an area prior to entry, in order to detect Improvised Explosive Devices (IEDs), IED material, IED emplacement teams, and after exiting, monitor for re-seeding. Puma is a hand launched UAS with a wing span of 9.2 feet, weighing 13lbs per air vehicle, and aerial observation ranges up to 28 kilometers. The payload consists of a gimballed turret with an EO/IR sensor and used encrypted digital data link. Puma can be recovered in very tight areas using a vertical descent auto land. A Puma system consists of two air vehicles, two GCSs, and one RSTA kit. A SIGINT variant of the Puma is also available.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV
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SURSS has transitioned from an eight channel to a Digital Data Link (DDL). SURSS is developing and procuring a Single Operator Man-Portable Ground Control System (SOMGCS), mobile ad-hoc network (MANET), laser marker, high endurance batteries, and rapid charging capability.

Prior years include funds associated with the RQ-21A system while it was funded as a separate project under the RQ-11 program. RQ-21A is currently funded under PE 0305239M and LI 4737.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.718	0.635	0.484	-	0.484
Current President's Budget	0.682	0.635	0.418	-	0.418
Total Adjustments	-0.036	0.000	-0.066	-	-0.066
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.036	0.000			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.066	-	-0.066

Change Summary Explanation

The FY 2017 funding request was reduced by \$0.061 million to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV				Project (Number/Name) 2292 / RQ-11 UAV			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2292: RQ-11 UAV	2.125	0.682	0.635	0.418	-	0.418	1.510	0.515	0.501	0.512	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Unit Remote Scouting System (SURSS) - The SURSS program procures an unmanned aircraft system (UAS) to provide the company/detachment level with scalable airborne reconnaissance and surveillance to aid in detecting, identifying, engaging, or avoiding enemy units. In December of 2013 the Approved Acquisition Objective (AAO) for the SURSS program was changed to include the RQ-12 Wasp, RQ-11 Raven, and RQ-20 Puma as the material solutions for the Block 0, Block 1, and Block 2 requirements of the SURSS requirement document.

RQ-12 Wasp (Block 0) - Wasp is a small UAS consisting of 2 air vehicles and a Ground Control Station (GCS). The air vehicle has an overall length of 40 inches with a weight of approximately 2.25 pounds. The payload consists of a gimballed turret with Electro Optical/Infrared (EO/IR) sensor and uses an encrypted data link. It provides near real time reconnaissance required by the platoon and rifle squad which reduces the Intelligence, Surveillance, and Reconnaissance (ISR) request-to-response timeframe and eliminates delays or denials for coverage due to an imbalance of unmanned air systems to requests. Wasp is used for remote reconnaissance and surveillance, force protection, convoy security, target acquisition, and battle damage assessment. A Wasp system consists of two air vehicles, two GCSs, and one reconnaissance, surveillance, and target acquisition (RSTA) kit.

RQ-11 Raven (Block 1)- Raven is a five pound, hand launched, reusable vehicle with a span of 55 inches. The air vehicle flies at an altitude of 300-500 feet above ground level at a speed of approximately 35 knots and has a maximum duration of 90 minutes. Ravens interchangeable payloads, autopilot and propulsion system are commercial-off-the shelf (COTS) subsystems. The GCS uses a rugged hand controller connected to a communication control box. A Raven system consists of three air vehicles, two GCS, one RSTA kit and one field repair kit (FRK). The RSTA kit is used for mission planning, autonomous flight operations, and mission product archiving. The FRK contains consumable items used during operations and maintenance.

RQ-20 Puma (Block 2) - Puma is an all environment UAS system providing ISR to Route Clearance Platoons (RCP) and Combat Logistics Patrols (CLP). Puma allows RCPs and CLPs to scan an area prior to entry, in order to detect Improvised Explosive Devices (IEDs), IED material, IED emplacement teams, and after exiting, monitor for re-seeding. Puma is a hand launched UAS with a wing span of 9.2 feet, weighing 13lbs per air vehicle, and aerial observation ranges up to 28 kilometers. The payload consists of a gimballed turret with an EO/IR sensor and used encrypted digital data link. Puma can be recovered in very tight areas using a vertical descent auto land. A Puma system consists of two air vehicles, two GCSs, and one RSTA kit. A SIGINT variant of the Puma is also available.

SURSS has transitioned from an eight channel to a Digital Data Link (DDL). SURSS is developing and procuring a Single Operator Man-Portable Ground Control System (SOMGCS), mobile ad-hoc network (MANET), laser marker, high endurance batteries, and rapid charging capability.

Prior years include funds associated with the RQ-21A system while it was funded as a separate project under the RQ-11 program. RQ-21A is currently funded under PE 0305239M and LI 4737.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV	Project (Number/Name) 2292 / RQ-11 UAV

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development and Support	0.682	0.635	0.418	0.000	0.418
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued TSN2 effort and transitioned to Single Operator Man-Portable Ground Control Station (SOMGCS), conducted Reliability, Maintainability, and Availability Analysis on Electric Optical/Infrared gimbal payloads.					
-Completed field user evaluation of universal tactical controller dual screen configuration.					
-Initiated assessment of advanced payloads and technologies to include; high endurance batteries, tactical launchers, directional antennas, and SIGINT payloads.					
-Initiated Single Operator Man-portable Ground Control Station (SOMGCS) development.					
FY 2016 Plans:					
-Continue SOMGCS development.					
-Initiate development and integration of Meshed Area Networks (MANET).					
-Initiate and complete development and integration of electronic warfare capability.					
-Initiate assessment of laser marker.					
-Initiate assessment of rapid charging capabilities.					
FY 2017 Base Plans:					
-Continue development and integration of communication relay.					
-Complete SOMGCS development and transition to production.					
-Initiate field user assessment of laser marker.					
FY 2017 OCO Plans:					
N/A					
Accomplishments/Planned Programs Subtotals	0.682	0.635	0.418	0.000	0.418

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/4757: RQ-11 UAV	4.477	13.430	1.976	3.817	5.793	14.078	0.708	0.799	0.899	1.012	133.589

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV	Project (Number/Name) 2292 / RQ-11 UAV
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D. Acquisition Strategy

The program office is pursuing a rapid acquisition approach to quickly field new technology and capabilities to the warfighter. The strategy is to use evolutionary acquisition with incremental developments to meet the final desired Small Unit Remote Scouting System (SURSS) requirements (Joint USMC/USA/SOCOM capabilities). The next increment will involve an evolution to a Group 1 (Family of System) individually capable of executing requirements for long, medium and short range missions in fulfillment of the SURSS requirement.

E. Performance Metrics

Fielded joint material solution.

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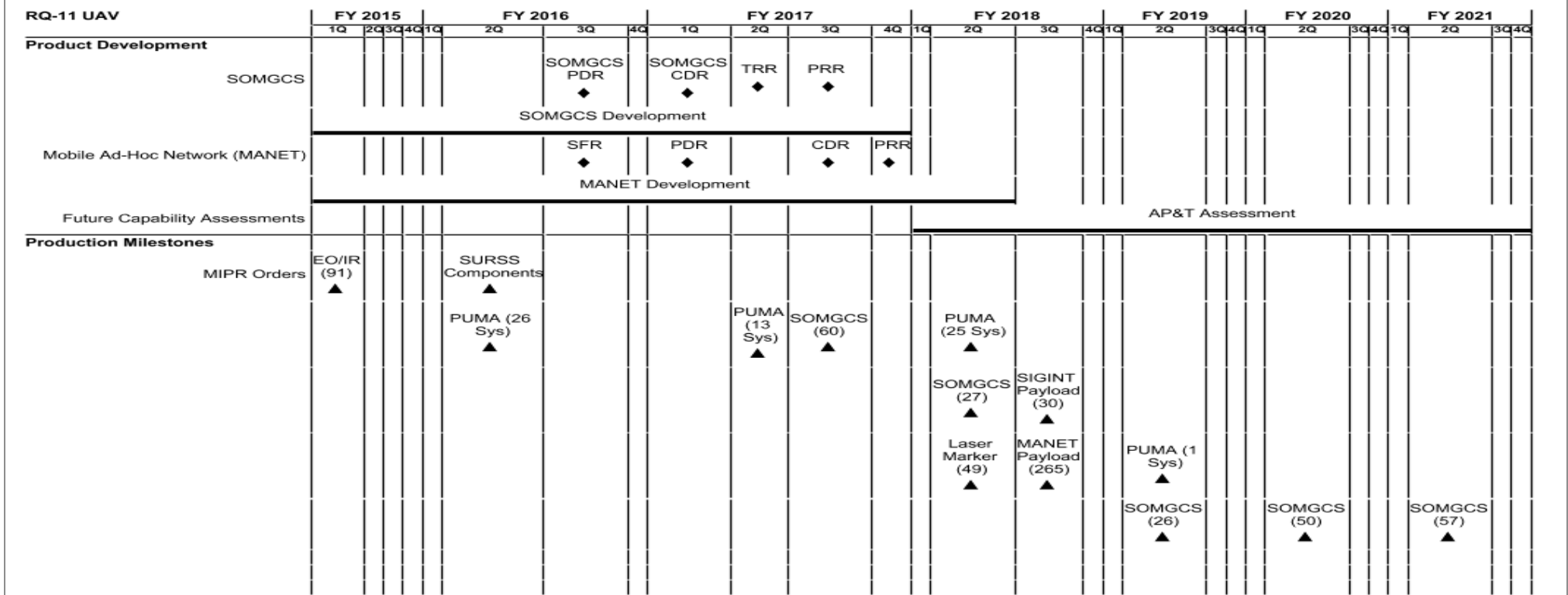
Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0305232M / RQ-11 UAV

Project (Number/Name)
2292 / RQ-11 UAV



2017PB - 0305232M - 2292

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV	Project (Number/Name) 2292 / RQ-11 UAV
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-11 UAV				
Product Development: SOMGCS: Product Development Review	3	2016	3	2016
Product Development: SOMGCS: Component Developemnt Review	1	2017	1	2017
Product Development: SOMGCS: Technical Readiness Review	2	2017	2	2017
Product Development: SOMGCS: Production Readiness Review	3	2017	3	2017
Product Development: SOMGCS: SOMGCS Development (Formerly TSN2)	1	2015	4	2017
Product Development: Mobile Ad-Hoc Network (MANET): System Functional Review	3	2016	3	2016
Product Development: Mobile Ad-Hoc Network (MANET): Product Development Review	1	2017	1	2017
Product Development: Mobile Ad-Hoc Network (MANET): Component Development Review	3	2017	3	2017
Product Development: Mobile Ad-Hoc Network (MANET): Production Readiness Review	4	2017	4	2017
Product Development: Mobile Ad-Hoc Network (MANET): MANET Development	1	2015	2	2018
Product Development: Future Capability Assessments: Advanced Payload and Technology Assessment	1	2018	4	2021
Production Milestones: MIPR Orders: FY15 EO/IR	1	2015	1	2015
Production Milestones: MIPR Orders: FY16 SURSS Components	2	2016	2	2016
Production Milestones: MIPR Orders: FY16 PUMA	2	2016	2	2016
Production Milestones: MIPR Orders: FY17 PUMA	2	2017	2	2017
Production Milestones: MIPR Orders: FY17 SOMGCS	3	2017	3	2017
Production Milestones: MIPR Orders: FY18 PUMA	2	2018	2	2018
Production Milestones: MIPR Orders: FY18 SOMGCS	2	2018	2	2018
Production Milestones: MIPR Orders: FY18 SIGINT Payloads	3	2018	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305232M / RQ-11 UAV	Project (Number/Name) 2292 / RQ-11 UAV
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: MIPR Orders: FY18 MANET Payloads	3	2018	3	2018
Production Milestones: MIPR Orders: FY18 Laser Designator	2	2018	2	2018
Production Milestones: MIPR Orders: FY19 PUMA	2	2019	2	2019
Production Milestones: MIPR Orders: FY19 SOMGCS	2	2019	2	2019
Production Milestones: MIPR Orders: FY20 SOMGCS	2	2020	2	2020
Production Milestones: MIPR Orders: FY21 SOMGCS	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	21.689	0.851	0.688	0.716	-	0.716	0.956	0.812	0.830	0.846	Continuing	Continuing
9C84: MCTUAS	21.689	0.851	0.688	0.716	-	0.716	0.956	0.812	0.830	0.846	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Marine Corps Tactical Unmanned Aircraft System project supports the fielded RQ-7B Shadow Unmanned Aircraft System (UAS) by conducting research, development, test and evaluation for improvement of the RQ-7 UAS capabilities in Reconnaissance, Surveillance and Target Acquisition, Intelligence, Battle Damage Assessment, Laser Designation and Force Protection. The RQ-7B Shadow UAS provides critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level.

RQ-7B Shadow UAS are acquired through the United States Army (US Army) UAS Program Office to fulfill United States Marine Corps (USMC) UAS requirements. In order to optimize interoperability, maintainability, and capability with minimal cost, the USMC and US Army plan to develop additional capabilities for the common RQ-7 system to include the fuselage, flight and mission electrical and electronic systems, propulsion system, communications system, expeditionary footprint, and capability payloads. These funds represent the USMC share of the combined joint development cost through Program Management Office UAS and the RQ-7 USMC specific development efforts of the NAVAIR 5.1 UAV Test Directorate.

This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.851	0.688	0.858	-	0.858
Current President's Budget	0.851	0.688	0.716	-	0.716
Total Adjustments	0.000	0.000	-0.142	-	-0.142
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.142	-	-0.142

Change Summary Explanation

The FY 2017 funding request was reduced by \$0.107M to account for the availability of prior year execution balances.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity <i>1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) <i>PE 0305233N / RQ-7 UAV</i>
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Decrease in RQ-7 UAV by \$0.035M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Schedule: Not applicable.

Technical: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV				Project (Number/Name) 9C84 / MCTUAS			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
9C84: MCTUAS	21.689	0.851	0.688	0.716	-	0.716	0.956	0.812	0.830	0.846	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Marine Corps Tactical Unmanned Aircraft System project supports the fielded RQ-7B Shadow Unmanned Aircraft System (UAS) by conducting research, development, test and evaluation for improvement of the RQ-7 UAS capabilities in Reconnaissance, Surveillance and Target Acquisition, Intelligence, Battle Damage Assessment, Laser Designation and Force Protection. The RQ-7B Shadow UAS provides critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level.

RQ-7B Shadow UAS are acquired through the United States Army (US Army) UAS Program Office to fulfill United States Marine Corps (USMC) UAS requirements. In order to optimize interoperability, maintainability, and capability with minimal cost, the USMC and US Army plan to develop additional capabilities for the common RQ-7 system to include the fuselage, flight and mission electrical and electronic systems, propulsion system, communications system, expeditionary footprint, and capability payloads. These funds represent the USMC share of the combined joint development cost through Program Management Office UAS and the RQ-7 USMC specific development efforts of the NAVAIR 5.1 UAV Test Directorate.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: MCTUAS Development Support	0.851	0.688	0.716	0.000	0.716
Articles:	-	-	-	-	-
Description: Joint development efforts with US Army RQ-7 Shadow Program, for common RQ-7 block upgrades, United States Marine Corps specific development efforts at the joint and Navy unique levels required for continued improvement and interoperability.					
FY 2015 Accomplishments: Development of RQ-7Bv2 Software Release 4/5 initiative in support of Problem/Change Report corrections and Information Assurance efforts for Intelligence Surveillance Reconnaissance Systems.					
FY 2016 Plans: Funding continues development for ongoing initiatives and will initiate development efforts for improvements to Intelligence Surveillance Reconnaissance systems, external payloads, communications systems, digital interoperability initiative, and propulsion systems.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV	Project (Number/Name) 9C84 / MCTUAS
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Funding continues development for ongoing initiatives and will initiate development efforts for improvements to Intelligence Surveillance Reconnaissance systems, external payloads, communications systems, digital interoperability initiative, propulsion systems, and expeditionary footprint. <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.851	0.688	0.716	0.000	0.716

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0589: RQ-7 UAV	0.000	3.773	3.534	-	3.534	0.000	0.000	0.000	0.000	0.000	100.843

Remarks

D. Acquisition Strategy

Sole source engineering development services contract with Textron Systems Unmanned System (formerly Aircraft Armament Incorporated) through United States Army Program Management Unmanned Aircraft Systems and United States Marine Corps (USMC) unique capability development efforts of the Navy Unmanned Aircraft System (UAS) Test Squadron.

E. Performance Metrics

Attainment of targeted development effort upgrades improving operational capability of the RQ-7 UAS USMC Tactical UAS.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV	Project (Number/Name) 9C84 / MCTUAS
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	14.650	0.000		0.000		0.000		-		0.000	0.000	14.650	-
Subtotal			14.650	0.000		0.000		0.000		-		0.000	0.000	14.650	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Development Efforts	Various	Various : Various	4.289	0.851	Jun 2015	0.688	Nov 2015	0.716	Jun 2017	-		0.716	Continuing	Continuing	Continuing
Prior year Support no longer funded in the FYDP	Various	Various : Various	0.715	0.000		0.000		0.000		-		0.000	0.000	0.715	-
Subtotal			5.004	0.851		0.688		0.716		-		0.716	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior year T&E no longer funded in the FYDP	Various	Various : Various	2.035	0.000		0.000		0.000		-		0.000	0.000	2.035	-
Subtotal			2.035	0.000		0.000		0.000		-		0.000	0.000	2.035	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	Project Cost Totals		21.689	0.851	0.688	0.716	0.716	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV	Project (Number/Name) 9C84 / MCTUAS
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RQ-7	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Product Development	Joint Development Efforts																											
Test and Evaluation																												

2017DON - 0305233N - 9C84

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305233N / RQ-7 UAV	Project (Number/Name) 9C84 / MCTUAS
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-7				
Product Development: Joint and USMC Unique Development Efforts	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASLO)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	64.509	4.813	4.647	5.071	-	5.071	5.218	5.208	5.317	5.430	Continuing	Continuing
3192: <i>RQ-21 BLACKJACK</i>	64.509	4.813	4.647	5.071	-	5.071	5.218	5.208	5.317	5.430	Continuing	Continuing

A. Mission Description and Budget Item Justification

The RQ-21A BLACKJACK (formerly known as The Small Tactical Unmanned Aircraft System (STUAS)) is a combined United States Navy (USN) and United States Marine Corps (USMC) program that provides persistent maritime and land-based tactical Intelligence, Surveillance, and Reconnaissance/Target Acquisition support for tactical level maneuver decisions and unit level force defense/force protection for Naval amphibious assault ships (multi-ship classes) and Navy and Marine land forces. This system will support Naval Missions such as building the Recognized Maritime Picture, Maritime Security Operations, Maritime Interdiction Operations, and provide support for Naval Units operating from sea/shore in Overseas Contingency Operations. This submission is the USNs portion of the program and has been coordinated with the USMC budget submission PE 0305239M (RQ-21A).

The RQ-21A BLACKJACK system will continue to evolve and upgrade capabilities to satisfy capabilities shortfalls, new requirements, and reliability, maintainability and safety issues. Upgraded capabilities may include Navy Command and Control integration, Weapons Integration, Heavy Fuel Engine, Laser Designator, Frequency Agile Communications Relay, Digital Common Data Link, and cyclic refresh of the Electro-Optical/Infrared camera. RQ-21A BLACKJACK will also continue to expand its shipboard capability across new ship classes.

This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.813	4.647	5.276	-	5.276
Current President's Budget	4.813	4.647	5.071	-	5.071
Total Adjustments	0.000	0.000	-0.205	-	-0.205
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.205	-	-0.205

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	
Change Summary Explanation Decrease in SMALL (LEVEL 0) TACTICAL UAS (STUASL0) by \$0.211M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015. Schedule: Requirements for training updates identified during Initial Operational Test and Evaluation (IOT&E) delayed the declaration of Marine Corps Initial Operational Capability (IOC) from 3QFY15 to 1QFY16. Limited Low Rate Initial Production (LRIP) procurements in prior years resulted in an immature production line and the need for additional LRIP lots to incorporate correction actions and stabilize the supplier base, pushing Full Rate Production Decision (FRPD) from 4QFY15 to 4QFY16. RQ-21 Full Rate Production Lot 1 (FRP 1) was updated to include options for 4 Navy RQ-21A systems. Technical: N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	Project (Number/Name) 3192 / RQ-21 BLACKJACK
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3192: RQ-21 BLACKJACK	64.509	4.813	4.647	5.071	-	5.071	5.218	5.208	5.317	5.430	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The RQ-21A BLACKJACK (formerly known as The Small Tactical Unmanned Aircraft System (STUAS)) is a combined United States Navy (USN) and United States Marine Corps (USMC) program that provides persistent maritime and land-based tactical Intelligence, Surveillance, and Reconnaissance/Target Acquisition support for tactical level maneuver decisions and unit level force defense/force protection for Naval amphibious assault ships (multi-ship classes) and Navy and Marine land forces. This system will support Naval Missions such as building the Recognized Maritime Picture, Maritime Security Operations, Maritime Interdiction Operations, and provide support for Naval Units operating from sea/shore in Overseas Contingency Operations. This submission is the USNs portion of the program and has been coordinated with the USMC budget submission PE 0305239M (RQ-21A).

The RQ-21A BLACKJACK system will continue to evolve and upgrade capabilities to satisfy capabilities shortfalls, new requirements, and reliability, maintainability and safety issues. Upgraded capabilities may include Navy Command and Control integration, Weapons Integration, Heavy Fuel Engine, Laser Designator, Frequency Agile Communications Relay, Digital Common Data Link, and cyclic refresh of the Electro-Optical/Infrared camera. RQ-21A BLACKJACK will also continue to expand its shipboard capability across new ship classes.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Upgrade Efforts	1.220	1.673	1.250	0.000	1.250
Articles:	-	-	-	-	-
Description: Provide Upgrade Efforts					
FY 2015 Accomplishments: RQ-21A Blackjack completed ship based Initial Operational Test and Evaluation (IOT&E), and corrected several software deficiencies cited in the IOT&E Report. The program continued software engineering and development for block software updates and began development of the advanced heavy fuel engine to extend the maximum gross takeoff weight.					
FY 2016 Plans: RQ-21A Blackjack will continue correction of deficiencies based on the final FY15 IOT&E Report. The program will continue advanced heavy fuel engine integration and testing. Other upgrades include the cyclic refresh of					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	Project (Number/Name) 3192 / RQ-21 BLACKJACK

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>the Electro-Optical/Infrared camera, associated turret system, communications relay package, and automated identification system.</p> <p>FY 2017 Base Plans: RQ-21A Blackjack will continue correction of deficiencies for the IOT&E Report. The program will continue software engineering and development for block software updates. The program will complete heavy fuel engine development. Continue other upgrades which includes the cyclic refresh of the Electro-Optical/Infrared camera, associated turret system, communications relay package, and automated identification system.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Engineering and Technical Services</p> <p align="right">Articles:</p> <p>Description: Provides for the Government Engineering Technical Support, Logistics Support, Test and Evaluation, other Government Support, Contractor Support Services, Program Management Support, Program related travel in support of the upgrade/payload efforts.</p> <p>FY 2015 Accomplishments: Provided support for the Government Engineering Technical Support, Logistics Support, Test and Evaluation, Contractor Support Services, Program Management Support, and program related travel in support of upgrades and correction of deficiencies.</p> <p>FY 2016 Plans: Continue support for the Government Engineering Technical Support, Logistics Support, Test and Evaluation, Other Government Support, Contract Support Services, Program Management Support, and program related travel in support of correction of deficiencies and upgrade efforts.</p> <p>FY 2017 Base Plans: Provide support for Government Engineering Technical Support, Logistics Support, Test and Evaluation, other Government support, Contractor Services support, Program Management Support, and program related travel in support of upgrades and correction of deficiencies. FY17 includes additional funding for Government Engineering technical support to perform and evaluate correction of deficiencies completed by the Government and Prime contractor based on the Initial Operational Test and Evaluation report released in 3QFY15.</p> <p>FY 2017 OCO Plans:</p>	3.593	2.974	3.821	0.000	3.821
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASLO)	Project (Number/Name) 3192 / RQ-21 BLACKJACK

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	4.813	4.647	5.071	0.000	5.071

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0444: STUASLO	45.000	57.298	0.000	70.000	70.000	1.950	0.000	0.000	0.000	0.000	202.448
• RDTEN/0305239M: (U)RQ-21A	7.782	6.251	9.497	-	9.497	9.295	8.736	8.911	9.107	Continuing	Continuing
• PMC/4737: STUAS/RQ-21A	69.315	77.916	80.217	-	80.217	73.004	72.067	82.777	84.379	Continuing	Continuing
• PMC/7000: Spares and Repair Parts	7.242	4.111	5.812	-	5.812	5.718	5.415	5.530	5.638	Continuing	Continuing
• APN/0605: STUASLO Spares	10.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.000

Remarks

D. Acquisition Strategy

The program office has utilized a competitive acquisition approach for award of the Engineering and Manufacturing Development effort to field a capability that meets threshold requirements. Low Rate Initial Production (LRIP) test article was utilized to successfully complete Initial Operational Test and Evaluation (IOT&E). LRIP continues through FY16 to demonstrate production line maturity. Future payload upgrades and development shall be competitively sourced or procured via Government Laboratories with Insitu, the prime contractor, performing integration efforts as required.

E. Performance Metrics

Attainment of Full Rate Production, correction of deficiencies from the IOT&E Report, and attainment of United States Marine Corps and United States Navy Full Operational Capability in accordance with the approved schedule.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	Project (Number/Name) 3192 / RQ-21 BLACKJACK
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Upgrade Efforts/Correction of Deficiencies	C/BOA	Insitu, Inc : Bingen, WA	1.520	1.220	Jul 2015	1.093	Jan 2016	1.250	Mar 2017	-		1.250	Continuing	Continuing	Continuing
Mission Training Device	MIPR	JTC/SIL : Redstone Arsenal, AL	2.136	0.000		0.580	Mar 2016	0.000		-		0.000	0.000	2.716	2.716
Prior year Prod Devt no longer funded in the FYDP	Various	Various : Various	26.989	0.000		0.000		0.000		-		0.000	0.000	26.989	26.989
Subtotal			30.645	1.220		1.673		1.250		-		1.250	-	-	-

Remarks
Product development corresponds to R-2A Upgrade Efforts.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	WR	NAWC-AD : Patuxent River, MD	4.521	0.100	Dec 2014	0.000		0.100	Dec 2016	-		0.100	Continuing	Continuing	Continuing
Training Support	WR	NAWC-TSD : Orlando, FL	3.306	0.555	Dec 2014	0.440	Feb 2016	0.490	Dec 2016	-		0.490	Continuing	Continuing	Continuing
Software Engineering Support	WR	NAWC-WD : China Lake, CA	7.170	1.225	Dec 2014	1.200	Feb 2016	1.200	Dec 2016	-		1.200	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWC-AD : Patuxent River, MD	11.139	1.021	Dec 2014	0.392	Dec 2015	0.990	Dec 2016	-		0.990	Continuing	Continuing	Continuing
Subtotal			26.136	2.901		2.032		2.780		-		2.780	-	-	-

Remarks
Support is included within R-2A Engineering and Technical Services.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASLO)	Project (Number/Name) 3192 / RQ-21 BLACKJACK
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	C/CPFF	OPTEVFOR : Norfolk, VA	2.528	0.000		0.385	Jan 2016	0.370	Jan 2017	-		0.370	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	0.135	0.016	Mar 2015	0.135	Dec 2015	0.015	Dec 2016	-		0.015	Continuing	Continuing	Continuing
Subtotal			2.663	0.016		0.520		0.385		-		0.385	-	-	-

Remarks
Test and Evaluation is included within R-2A Engineering and Technical Services.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Engineering Support	MIPR	DTIC : FT. Belvoir, VA	2.356	0.225	Mar 2015	0.225	Mar 2016	0.230	Mar 2017	-		0.230	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Bowhead : Patuxent River, MD	0.150	0.359	Jan 2015	0.149	Feb 2016	0.366	Jan 2017	-		0.366	Continuing	Continuing	Continuing
Travel	WR	Various : Various	0.210	0.092	Nov 2014	0.048	Nov 2015	0.060	Oct 2016	-		0.060	Continuing	Continuing	Continuing
Prior Year Mgmt Svcs no longer funded in the FYDP	Various	Various : Various	2.349	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			5.065	0.676		0.422		0.656		-		0.656	-	-	-

Remarks
Management Services is included within R-2A Engineering and Technical Services.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		64.509	4.813	4.647	5.071	5.071	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	Project (Number/Name) 3192 / RQ-21 BLACKJACK

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-21A				
Acquisition Milestones: Milestones: USMC Initial Operational Capability (IOC)	2	2016	2	2016
Acquisition Milestones: Milestones: Physical Configuration Audit	3	2016	3	2016
Acquisition Milestones: Milestones: Full-Rate Production Decision	4	2016	4	2016
Test and Evaluation: Operational Evaluation: IOT&E Report	3	2015	3	2015
Test and Evaluation: Operational Evaluation: Initial Operational Test & Evaluation (IOT&E) Ship	1	2015	1	2015
Test and Evaluation: Operational Evaluation: Beyond LRIP Report (BLRIP)	4	2015	4	2015
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 1	4	2015	1	2016
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 2	3	2016	4	2016
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 3	3	2017	4	2017
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 4	3	2018	4	2018
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 5	3	2019	4	2019
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 6	3	2020	4	2020
Test and Evaluation: Operational Evaluation: Follow-on Test and Evaluation 7	3	2021	4	2021
Production Milestones: Contract Awards: LRIP Lot 3	1	2015	1	2015
Production Milestones: Contract Awards: LRIP Lot 4	3	2015	3	2015
Production Milestones: Contract Awards: LRIP Lot 5	2	2016	2	2016
Production Milestones: Contract Awards: Full-Rate Production Contract Award 1	2	2017	2	2017
Production Milestones: Contract Awards: Full-Rate Production Contract Award 2	2	2018	2	2018
Production Milestones: Contract Awards: Full-Rate Production Contract Award 3	2	2019	2	2019
Production Milestones: Contract Awards: Full-Rate Production Contract Award 4	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305234N / (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	Project (Number/Name) 3192 / RQ-21 BLACKJACK
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: Full-Rate Production Contract Award 5	1	2021	1	2021
Production Milestones: Contract Awards: ICS Contract Award 2	3	2015	3	2015
Production Milestones: Contract Awards: ICS Option Award 1	3	2016	3	2016
Production Milestones: Contract Awards: ICS Option Award 2	2	2017	2	2017
Deliveries: LRIP Lot 3 USMC	4	2015	4	2015
Deliveries: LRIP Lot 4 USMC	1	2016	1	2016
Deliveries: LRIP Lot 4 USN	2	2016	2	2016
Deliveries: LRIP Lot 5 USMC	1	2017	1	2017
Deliveries: LRIP Lot 5 USN	4	2017	4	2017
Deliveries: FRP Lot 1 USMC	4	2017	4	2017
Deliveries: FRP Lot 1 USN	1	2018	1	2018
Deliveries: FRP Lot 2	4	2018	4	2018
Deliveries: FRP Lot 3	4	2019	4	2019
Deliveries: FRP Lot 4	4	2020	4	2020
Deliveries: FRP Lot 5	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	58.247	7.782	6.251	9.497	-	9.497	9.295	8.736	8.911	9.107	Continuing	Continuing
2298: <i>SMALL (LEVEL 0) TACTICAL UAS (STUALO)</i>	58.247	7.782	6.251	9.497	-	9.497	9.295	8.736	8.911	9.107	Continuing	Continuing

A. Mission Description and Budget Item Justification

The RQ-21A program will provide persistent maritime and land-based tactical Reconnaissance, Surveillance and Target Acquisition (RSTA) data collection and dissemination capability to the war fighter. For the United States Marine Corps (USMC), RQ-21A will provide the Marine Expeditionary Force and subordinate commands (divisions and regiments) with a dedicated, organic Intelligence, Surveillance, and Reconnaissance (ISR) capability delivering intelligence products directly to the tactical commander in real time. For the United States Navy (USN) RQ-21A will provide persistent RSTA support for tactical maneuver decisions and unit-level force defense/force protection for Navy Ships, Marine Corps land forces, Navy Expeditionary Combat Command forces, and Navy Special Warfare Units. This is a combined development program between Navy and Marine Corps. This submission is the Marine Corps portion of the program and has been coordinated with the Navy budget submission under PE 0305234N RQ-21A BLACKJACK.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.192	6.435	9.608	-	9.608
Current President's Budget	7.782	6.251	9.497	-	9.497
Total Adjustments	-0.410	-0.184	-0.111	-	-0.111
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-0.184			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.410	0.000			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.111	-	-0.111

Change Summary Explanation

Schedule: Requirements for training changes identified during IOT&E delayed the declaration of Marine Corps Initial Operational Capability (IOC) from 3QFY15 to 2QFY16. Limited Low Rate Initial Production (LRIP) procurements in prior years resulted in an immature production line and the need for additional LRIP lots to incorporate correction actions and stabilize the supplier base, pushing Full Rate Production Decision (FRPD) from 4QFY15 to 4QFY16.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	PE 0305239M / (U)RQ-21A

Funding: The increase in funding from FY 2016 to FY 2017 of \$3.173M supports the RQ-21A product improvement program specifically targeting improvements to the fuel tank, maximum gross takeoff weight, recovery system, avionics module, cyclic turret refresh, flight dynamic, and flight envelope development onboard the LHD/LHA class ship.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A				Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2298: SMALL (LEVEL 0) TACTICAL UAS (STUALO)	58.247	7.782	6.251	9.497	-	9.497	9.295	8.736	8.911	9.107	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The RQ-21A program will provide persistent maritime and land-based tactical Reconnaissance, Surveillance and Target Acquisition (RSTA) data collection and dissemination capability to the Warfighter. For the United States Marine Corps (USMC), RQ-21A will provide the Marine Expeditionary Force and subordinate commands (divisions and regiments) with a dedicated, organic Intelligence, Surveillance, and Reconnaissance (ISR) capability delivering intelligence products directly to the tactical commander in real time. For the United States Navy (USN) RQ-21A will provide persistent RSTA support for tactical maneuver decisions and unit-level force defense/force protection for Navy Ships, Marine Corps land forces, Navy Expeditionary Combat Command forces, and Navy Special Warfare Units. This is a combined development program between Navy and Marine Corps. This submission is the Marine Corps portion of the program and has been coordinated with the Navy budget submission PE 0305234N RQ-21A BLACKJACK.

The RQ-21A system will continue to evolve addressing capability shortfalls, new requirements, obsolescence equipment, reliability, maintainability, and safety issues. Additional capabilities and/or system upgrades may include Navy Command and Control integration, Weapons Integration, Heavy Fuel Engine, Laser Designator, Frequency Agile Communications Relay, Digital Common Data link, and cyclic refresh of the Electro-optical/Infrared (EO/IR) camera.

The increase in funding from FY 2016 to FY 2017 of \$3.173M supports the RQ-21A product improvement program specifically targeting improvements to the fuel tank, maximum gross takeoff weight, recovery system, avionics module, along with testing associated with the cyclic turret refresh.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	3.337	4.177	6.500	0.000	6.500
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
-Continued correction of software deficiencies from IOT&E.					
-Continued software engineering and development for software block updates.					
-Continued Mission Training Device Development.					
-Initiated advanced heavy fuel engine development.					
-Initiated ALTICAM upgrade in response to IOT&E report.					
FY 2016 Plans:					
-Continue correction of deficiencies from IOT&E, including ALTICAM (product name) turret upgrade.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> -Continue software engineering and development for software block updates. -Continue advanced heavy fuel engine development. -Initiate cyclic technology refresh for EO/IR camera, Communications Relay Package, and Automated Identification System. -Initiate product improvement program to assess and address improvements to the fuel tank, maximum gross takeoff weight, recovery system, avionics module, and other components. -Complete Mission Training Device Development. -Initiate flight dynamic and envelope testing onboard the LHD/LHA class ship. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> -Continue correction of deficiencies from IOT&E. -Continue software engineering and development for software block updates. -Continue product improvement program to assess and address improvements to the fuel tank, maximum gross takeoff weight, recovery system, avionics module, and other components. -Complete advanced heavy fuel engine development. -Complete cyclic technology refresh for EO/IR camera, Communications Relay Package, and Automated Identification System. -Complete flight dynamic and envelope testing onboard the LHD/LHA class ship. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Support</p> <p align="right">Articles:</p>	1.992	1.366	1.602	0.000	1.602
<p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Continued Government Engineering Technical Support, Logistics Support, Test and Evaluation, other Government Support, Contractor Support Services, Program Management Support efforts, and program related travel via NAWC Pax River in support of IOT&E, upgrades, correction of deficiencies, and advanced engine development efforts. <p>FY 2016 Plans:</p>	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-Continue Government Engineering Technical Support, Test and Evaluation, other Government Support, Contractor Support Services, Program Management Support efforts, and program related travel via NAWCAD Pax River in support of upgrades and technology refresh. FY 2017 Base Plans: -Continue Government Engineering Technical Support, Test and Evaluation, other Government Support, Contractor Support Services, Program Management Support efforts, and program related travel via NAWCAD Pax River in support of upgrades and technology refresh. FY 2017 OCO Plans: N/A					
Title: Test and Evaluation	2.453	0.708	1.395	0.000	1.395
Articles:	-	-	-	-	-
FY 2015 Accomplishments: -Completed ship based IOT&E -Completed contractor support for IOT&E test system. -Completed testing of autopilot and differential GPS software updates. FY 2016 Plans: -Initiate follow-on test and evaluation for Software 7.5.2 testing FY 2017 Base Plans: -Initiate follow-on test and evaluation for cyclic turret refresh. -Initiate follow-on test and evaluation for recovery system upgrades. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	7.782	6.251	9.497	0.000	9.497

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTEN/0305234N: (U)SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	4.813	4.647	5.071	-	5.071	5.218	5.208	5.317	5.430	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017			FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/4737: RQ-21 UAS	69.315	77.916	80.217	-	80.217	73.004	72.067	82.777	84.379	Continuing	Continuing
• PMC/7000: Spares and Repair Parts	7.241	4.111	5.812	-	5.812	5.718	5.415	5.530	5.638	Continuing	Continuing
• APN/0444: STUASLO	45.000	57.298	0.000	70.000	70.000	1.950	0.000	0.000	0.000	0.000	202.448
• APN/0605: Spares and Repair Parts	10.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.000

Remarks

D. Acquisition Strategy

The program office utilized a competitive acquisition approach to award the Engineering and Manufacturing Development effort to field a capability that meets threshold requirements. The Low Rate Initial Production (LRIP) test article was utilized to successfully complete Initial Operational Test and Evaluation. LRIP production continues through FY16 to demonstrate production line maturity. Initial Operational Capability will be assessed in 2Q FY16 with entry into full rate production being assessed in 4Q FY16. Future payload upgrades and development shall be competitively sourced or procured via Government Laboratories with Insitu, the prime contractor, performing integration efforts as required.

E. Performance Metrics

Attainment of Full Rate Production (FRP), correction of Deficiencies from the IOT&E Report, and attainment of USMC Initial Operational Capability (IOC) and Full Operational Capability (FOC) in accordance with the approved schedule.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy											Date: February 2016				
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A					Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)				

Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development/Upgrades	C/BOA	Insitu, Inc : Bingen, WA	6.200	2.767	Dec 2014	3.136	Jan 2016	5.500	Jan 2017	-		5.500	Continuing	Continuing	Continuing
Product Development/Upgrades	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.041	Feb 2016	1.000	Feb 2017	-		1.000	Continuing	Continuing	Continuing
Prior Years Cumulative Total	C/FPIF	Insitu, Inc : Bingen, WA	28.492	0.000		0.000		0.000		-		0.000	0.000	28.492	28.492
Product Development/Mission Training Device	MIPR	J/SIL : Not Specified	0.000	0.570	Nov 2014	0.000		0.000		-		0.000	0.000	0.570	-
Subtotal			34.692	3.337		4.177		6.500		-		6.500	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	0.000	1.992	Dec 2014	1.366	Dec 2015	1.602	Dec 2016	-		1.602	Continuing	Continuing	Continuing
Subtotal			0.000	1.992		1.366		1.602		-		1.602	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Test and Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.665	Dec 2014	0.708	Dec 2015	1.395	Dec 2016	-		1.395	Continuing	Continuing	Continuing
Contractor Test System Support	C/FFP	Insitu, Inc : Bingen, WA	0.000	1.788	Nov 2014	0.000		0.000		-		0.000	0.000	1.788	-
Subtotal			0.000	2.453		0.708		1.395		-		1.395	-	-	-

Remarks
 Test and Evaluation corresponds to R-2A Engineering and Technical Services.
 FOT&E planned in FY16 and out to provide test periods for product updates and cyclic technology refresh and component improvement.
 Increases in funding from FY16 to FY17 supports the RQ-21A product improvement program.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)
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RQ-21A	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q								
Acquisition Milestones	Milestones:																																			
						USMC IOC ▲	PCA ▲	FRPD ◆																												
Test and Evaluation	Operational Evaluation																																			
	IOT&E Ship		IOT&E Rpt ▲					FOT&E				FOT&E				FOT&E				FOT&E				FOT&E				FOT&E				FOT&E				
				BLRIP Rpt ▲																																
Production Milestones	Contract Awards																																			
	LRIP III (3 USMC) ●		LRIP IV (3 USMC/3 USN) ●					LRIP V (3 USMC/3 USN) ●					FRP I (4 USMC/4 USN) ●								FRP II (4 USMC) ●								FRP III (5 USMC) ●							
			ICS II ●					ICS III ●								ICS IV ●																				
Deliveries																																				
					LRIP III (3 USMC) ▼	LRIP IV (2 USMC, 1 USN) ▼	LRIP IV (1 USMC, 2 USN) ▼						LRIP V (3 USMC) ▼				FRP I (4 USMC) ▼	FRP I (4 USN) ▼			FRP II (4 USMC) ▼				FRP III (5 USMC) ▼				FRP IV (5 USMC) ▼				FRP V (2 USMC) ▼			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
RQ-21A				
Acquisition Milestones: Milestones:: USMC Initial Operational Capability (IOC)	2	2016	2	2016
Acquisition Milestones: Milestones:: Full Rate Production Decision	4	2016	4	2016
Acquisition Milestones: Milestones:: Physical Configuration Audit	3	2016	3	2016
Test and Evaluation: Operational Evaluation: Initial Operational Test & Evaluation (IOT&E) Ship	1	2015	1	2015
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 1	4	2015	1	2016
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 2	3	2016	4	2016
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 3	3	2017	4	2017
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 4	3	2018	4	2018
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 5	3	2019	4	2019
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 6	3	2020	4	2020
Test and Evaluation: Operational Evaluation: Follow-On Test and Evaluation 7	3	2021	4	2021
Test and Evaluation: Operational Evaluation: IOT&E Report	3	2015	3	2015
Test and Evaluation: Operational Evaluation: Beyond LRIP Report (BLRIP)	4	2015	4	2015
Production Milestones: Contract Awards: LRIP Lot 3	1	2015	1	2015
Production Milestones: Contract Awards: LRIP Lot 4	3	2015	3	2015
Production Milestones: Contract Awards: LRIP Lot 5	2	2016	2	2016
Production Milestones: Contract Awards: Full-Rate Production Contract Award 1	2	2017	2	2017
Production Milestones: Contract Awards: Full-Rate Production Contract Award 2	2	2018	2	2018
Production Milestones: Contract Awards: Full-Rated Production Contract Award 3	2	2019	2	2019
Production Milestones: Contract Awards: Full-Rate Production Contract Award 4	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305239M / (U)RQ-21A	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: Full-Rate Production Contract Award 5	1	2021	1	2021
Production Milestones: Contract Awards: ICS Contract Award 2	3	2015	3	2015
Production Milestones: Contract Awards: ICS Contract Award 3	3	2016	3	2016
Production Milestones: Contract Awards: ICS Contract Award 4	2	2017	2	2017
Deliveries: LRIP Lot 3 USMC	4	2015	4	2015
Deliveries: LRIP Lot 4 USMC	1	2016	1	2016
Deliveries: LRIP Lot 4 USN	2	2016	2	2016
Deliveries: LRIP Lot 5 USMC	1	2017	1	2017
Deliveries: LRIP Lot 5 USN	4	2017	4	2017
Deliveries: FRP Lot 1 USMC	4	2017	4	2017
Deliveries: FRP Lot 1 USN	1	2018	1	2018
Deliveries: FRP Lot 2	4	2018	4	2018
Deliveries: FRP Lot 3	4	2019	4	2019
Deliveries: FRP Lot 4	4	2020	4	2020
Deliveries: FRP Lot 5	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305241N / (U)MULTI-INTELLIGENCE SENSOR DEVELOPMENT
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	17.751	39.645	77.965	-	77.965	99.593	94.845	62.057	53.078	Continuing	Continuing
3329: <i>Multi Intelligence Sensor Development</i>	0.000	17.751	31.577	39.795	-	39.795	31.313	31.837	28.314	28.956	Continuing	Continuing
3383: <i>P-8 Quick Reaction Capability (QRC)</i>	0.000	0.000	8.068	38.170	-	38.170	68.280	63.008	33.743	24.122	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET and are submitted annually to Congress in the classified budget justification books.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	17.751	49.145	61.746	-	61.746
Current President's Budget	17.751	39.645	77.965	-	77.965
Total Adjustments	0.000	-9.500	16.219	-	16.219
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-9.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	4.200	-	4.200
• Rate/Misc Adjustments	0.000	0.000	12.019	-	12.019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305241N / (U)MULTI-INTELLIGENCE SENSOR DEVELOPMENT	Project (Number/Name) 3329 / Multi Intelligence Sensor Development
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>3329: Multi Intelligence Sensor Development</i>	0.000	17.751	31.577	39.795	-	39.795	31.313	31.837	28.314	28.956	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET and are submitted annually to Congress in the classified budget justification books.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305241N / (U)MULTI-INTELLIGENCE SENSOR DEVELOPMENT				Project (Number/Name) 3383 / P-8 Quick Reaction Capability (QRC)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3383: P-8 Quick Reaction Capability (QRC)	0.000	0.000	8.068	38.170	-	38.170	68.280	63.008	33.743	24.122	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET and are submitted annually to Congress in the classified budget justification books.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0305242M I (U) <i>Unmanned Aerial Systems (UAS) Payloads</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	1.900	9.246	11.181	-	11.181	11.412	7.022	3.758	3.841	Continuing	Continuing
2298: <i>SMALL (LEVEL 0) TACTICAL UAS (STUALO)</i>	0.000	1.900	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.900
5501: <i>Signals Intelligence (SIGINT)</i>	0.000	0.000	5.564	6.062	-	6.062	5.588	3.876	2.742	2.802	Continuing	Continuing
5502: <i>Synthetic Aperture Radar/ Motion Target Indicator (SAR/ MTI)</i>	0.000	0.000	3.682	5.119	-	5.119	5.824	3.146	1.016	1.039	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Unmanned Aerial Systems (UAS) Payloads integration program will alleviate Marine Corps Intelligence, Surveillance and Reconnaissance (ISR) capability gaps caused by rapidly changing missions, threats and technologies. It will provide responsive capability to integrate and support rapid fielding of ISR payloads for all UAS within the Marine Corps. Sensor payloads will increase the effectiveness and versatility of the Marine Corps UAS currently planned to have the Electro-Optic(EO) / Infrared (IR) collection, communications relay, and automatic identification capabilities. Upgrades include, but are not limited to, Signals Intelligence (SIGINT)/ Electronic Warfare Support (ES), Synthetic Aperture Radar (SAR) / Motion Target Indicator (MTI), Wide Area and Hyperspectral Imagery collection.

These payloads provide the Marine Expeditionary Unit (MEU) organic capabilities that facilitate the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations.

The payload development process will follow a Hybrid Acquisition Model of Incremental/Spiral approach while leveraging upon work conducted by various government laboratories such as the Office of Naval Research (ONR), Defense Advanced Research Projects Agency (DARPA), Air Force Research Lab (AFRL), Joint Improvised Threat Defeat Agency (JIDA), the National Security Agency (NSA), and the National Geospatial Agency (NGA). Both SIGINT and SAR payloads will follow similar acquisition paths but on independent time schedules. These acquisition paths will be defined by three (3) phases and each marked by a decision gate. Phase I establishes the preliminary integration design concept and conduct of technology demonstration with validation of a Technology Readiness Level (TRL) 5/6 as the decision gate for Phase II. Phase II establishes full payload-to-Unmanned Aircraft System (UAS) integration during which time all necessary program management, engineering, fabrication, test, and evaluations activities are conducted to achieve Test Article Fabrication, System Test and Evaluation, Integrated Logistics Support (ILS) and Training Concept development, and Data Management and Documentation. Validation of funding, derived requirements, project risks, cost and schedule estimates, contracting strategy and achievement of TRL 7 or higher constitute the decision gate for Phase III. Phase III is program of record transition which supports a production decision based on the exit criteria from Phase II.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305242M I (U) <i>Unmanned Aerial Systems (UAS) Payloads</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.000	9.246	11.942	-	11.942
Current President's Budget	1.900	9.246	11.181	-	11.181
Total Adjustments	-0.100	0.000	-0.761	-	-0.761
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.100	0.000			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.761	-	-0.761

Change Summary Explanation

The funding increase of \$1.935M from FY16 to FY17 supports development and integration of payloads such as Signals Intelligence (SIGINT)/ Electronic Warfare Support (ES), and Synthetic Aperture Radar (SAR)/ Motion Target Indicator (MTI) in support of the Marine Corps UAS.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads			Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2298: SMALL (LEVEL 0) TACTICAL UAS (STUALO)	0.000	1.900	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.900
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

UAS Payloads was initially established in FY15 under Program Element 0305242M, Project 2298. Project 2298 was also used for Program Element 0305239M, RQ-21A Small Tactical UAS. In order to provide greater detail on payload development, each payload was assigned an individual project number starting in FY16.

In FY15, the UAS Payloads program will continue development of a Signals Intelligence (SIGINT)/ Electronic Warfare Support (ES), and Synthetic Aperture Radar (SAR)/Motion Target Indicator (MTI) payload leveraging existing payloads developed by the U.S. Air Force and U.S. Army, ultimately creating a payload that fits within form and fit dimensions of Marine Corps small tactical unmanned aerial systems. FY15 efforts include technology maturation primarily of SIGINT/ES and secondarily of SAR/MTI technologies including efforts to reduce size, weight, and power requirements in preparation for full scale development efforts commencing in FY16.

SIGINT and SAR/MTI capabilities are vital to the Marine Expeditionary Unit (MEU), the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations. Funding for these efforts are represented in Program Element 0305242M Projects 5501 and 5502 for FY16 and beyond.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	1.880	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments:					
- Initiated SIGINT/ES and SAR/MTI technology development and component miniaturization.					
- Initiated and completed fabrication and bench testing of prototype components for SIGINT/ES payload.					
- Procured a Group I UAV test system to support cost effective testing of SIGINT payload and payload components.					
FY 2016 Plans:					
N/A					
FY 2017 Base Plans:					
N/A					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Management Services	0.020	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2015 Accomplishments: - Initiated development of an Integrated Master Schedule. - Initiated development of Acquisition Strategy, Acquisition Program Baseline and Systems Engineering Plan.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.900	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PMC/4787: UAS Payloads	0.000	0.000	2.971	-	2.971	7.057	4.072	0.000	0.000	0.000	14.100

Remarks

D. Acquisition Strategy
The UAS Payload program utilizes a Hybrid Acquisition Model of Incremental/Spiral approach that leverages upon work conducted by various government laboratories in order to field capabilities that meet threshold requirements, and facilitates the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations.

E. Performance Metrics
Validation of funding, derived requirements, project risks, cost and schedule estimates, contracting strategy and achievement of a technology readiness level of TRL 7 or higher for Program of Record Transition. Successful development of a SIGINT payload, completion of DT/OT, and integration onboard a Marine Corps small tactical UAV.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUALO)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	MIPR	DLA : Philadelphia, PA	0.000	0.380	Feb 2015	0.000		0.000		-		0.000	0.000	0.380	-
Government Engineering	WR	NAWCAD : Patuxent River, MD	0.000	1.500	Feb 2015	0.000		0.000		-		0.000	0.000	1.500	-
Subtotal			0.000	1.880		0.000		0.000		-		0.000	0.000	1.880	-

Remarks
Changes in funding activities and amounts for FY15 in PB16 budget to PB17 are due to the utilization of other customer funds from the Joint IED Defeat Organization (JIEDDO). Prior to the establishment of this PE and funding during PB15 JIEDDO seeded the development effort for both the SIGINT and SAR/MTI payloads. This prior funding was sufficient to continue the required development at the Navy and Air Force Research labs, allowing the shifting of funding to Naval Air Warfare Center Aircraft Division in support of component testing and miniaturization. A Group I UAS was procured to support SIGINT testing due to insufficient test assets available for testing.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	WR	Various : Various	0.000	0.020	Feb 2015	0.000		0.000		-		0.000	0.000	0.020	-
Subtotal			0.000	0.020		0.000		0.000		-		0.000	0.000	0.020	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	0.000	1.900	0.000	0.000	-	0.000	0.000	1.900	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)
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SMALL (LEVEL 0) TACTICAL UAS (STUAL0)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Milestones	SRR ◆																											
Product Development		Initial Development and Product Transition																										

2017PB - 0305242M - 2298

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 2298 / SMALL (LEVEL 0) TACTICAL UAS (STUAL0)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SMALL (LEVEL 0) TACTICAL UAS (STUAL0)				
Milestones: System Requirements Review	1	2015	1	2015
Product Development: Component Development and Transition to Specific Payloads	2	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads				Project (Number/Name) 5501 / Signals Intelligence (SIGINT)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
5501: <i>Signals Intelligence (SIGINT)</i>	0.000	0.000	5.564	6.062	-	6.062	5.588	3.876	2.742	2.802	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2017 funding request was reduced by \$0.630 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The UAS Payloads program will develop and integrate a Signals Intelligence (SIGINT)/ Electronic Warfare Support (ES), payload for Marine Corps small tactical UASs. The SIGINT/ES payload will fill current capability gaps for the Marine Corps Intelligence, Surveillance and Reconnaissance (ISR) mission and is required as part of the Marine Corps mission to locate and target adversary Signals of Interest (SOI). The SIGINT/ES payload will leverage payloads previously developed by other Services and/or DoD laboratories to reduce cost and minimize schedule. This project continues efforts started in Program Element 0305242M Project 2298.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	0.000	2.914	4.062	0.000	4.062
Articles:	-	1	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans:					
<ul style="list-style-type: none"> - Complete SIGINT/ES payload component development. - Complete engineering and experimental tests in preparation for FY17 testing. - Initiate SIGINT/ES payload development. - Initiate construction of a prototype SIGINT/ES system that can receive and process a minimum of four signals of interest (SOI). 					
FY 2017 Base Plans:					
<ul style="list-style-type: none"> - Complete SIGINT/ES payload development. - Complete construction of a prototype SIGINT/ES system that can receive and process a minimum of four signals of interest (SOI). - Complete developmental tests. 					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy			Date: February 2016			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5501 / Signals Intelligence (SIGINT)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A						
Title: Support		0.000	0.900	1.100	0.000	1.100
		Articles:	-	-	-	-
FY 2015 Accomplishments: N/A						
FY 2016 Plans: - Initiate development of SIGINT/ES payload software to include frequency agile airborne receiver software.						
FY 2017 Base Plans: - Complete development of SIGINT/ES payload software to include frequency agile airborne receiver software.						
FY 2017 OCO Plans: N/A						
Title: Management Services		0.000	0.250	0.250	0.000	0.250
		Articles:	-	-	-	-
FY 2015 Accomplishments: N/A						
FY 2016 Plans: - Complete refinement and documentation of acquisition strategy. - Initiate engineering required for flight clearances.						
FY 2017 Base Plans: - Complete required engineering for flight clearances - Initiate Integrated Logistics Support (ILS), Training Concept development and Data Management/Documentation						
FY 2017 OCO Plans: N/A						
Title: Test and Evaluation		0.000	1.500	0.650	0.000	0.650
		Articles:	-	-	-	-
FY 2015 Accomplishments:						

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5501 / Signals Intelligence (SIGINT)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: - Initiate the establishment of a flight test aircraft support asset and configure flight test aircraft for SIGINT/ES payload flight test activity					
FY 2017 Base Plans: - Initiate experimental tests using flight test aircraft configured for SIGINT/ES payload flight test activity					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	5.564	6.062	0.000	6.062

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PMC/4787: UAS Payloads	0.000	0.000	2.971	-	2.971	7.057	4.072	0.000	0.000	0.000	14.100

Remarks

D. Acquisition Strategy
The UAS Payload program utilizes a Hybrid Acquisition Model of Incremental/Spiral approach that leverages upon work conducted by various government laboratories in order to field capability that meets threshold requirements, facilitates the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations.

E. Performance Metrics
Validation of funding, derived requirements, project risks, cost and schedule estimates, contracting strategy and achievement of a TRL 7 or higher for Program of Record transition. Successful development of a SIGINT payload, completion of DT/OT, and integration onboard Marine Corps small tactical UAVs.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5501 / Signals Intelligence (SIGINT)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	MIPR	AFRL : Dayton, OH	0.000	0.000		2.324	Feb 2016	3.472	Feb 2017	-		3.472	Continuing	Continuing	Continuing
Government Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.450	Nov 2015	0.450	Nov 2016	-		0.450	Continuing	Continuing	Continuing
Government Logistics	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.140	Nov 2015	0.140	Nov 2016	-		0.140	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		2.914		4.062		-		4.062	-	-	-

Remarks

Funding increases from FY16 to FY17 support the experimental tests using flight test aircraft.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Engineering Support	MIPR	AFRL : Dayton, OH	0.000	0.000		0.650	Feb 2016	0.850	Feb 2017	-		0.850	Continuing	Continuing	Continuing
Contractor Engineering Support	Various	Various : Patuxent River, MD	0.000	0.000		0.250	Feb 2016	0.250	Feb 2017	-		0.250	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.900		1.100		-		1.100	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Engineering Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.500	Nov 2015	0.650	Nov 2016	-		0.650	0.000	2.150	-
Subtotal			0.000	0.000		1.500		0.650		-		0.650	0.000	2.150	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5501 / Signals Intelligence (SIGINT)
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Proj 5501	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
SIGNALS INTELLIGENCE PAYLOAD																																
Milestones	SRR ◆					PDR ◆	CDR ◆		TRR ◆																							
Product Development			Component Development		Development				Correction of Deficiencies				Sft Update				Sft Update				Sft Update				Sft Update							
Test and Evaluation							Exp Test ▲		DT																							
Production												LRIP ▲																				

2017PB - 0305242M - 5501

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5501 / Signals Intelligence (SIGINT)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 5501				
SIGNALS INTELLIGENCE PAYLOAD: Milestones: System Requirements Review	1	2015	1	2015
SIGNALS INTELLIGENCE PAYLOAD: Milestones: Test Readiness Review	1	2017	1	2017
SIGNALS INTELLIGENCE PAYLOAD: Milestones: Product Design Review	2	2016	2	2016
SIGNALS INTELLIGENCE PAYLOAD: Milestones: Critical Design Review	3	2016	3	2016
Product Development: Component Development	3	2015	4	2015
Product Development: Prototype Design and Development	1	2016	4	2016
Product Development: Correction of Deficiencies	3	2017	4	2017
Product Development: Software Development and Updates 1	2	2018	3	2018
Product Development: Software Development and Updates 2	2	2019	3	2019
Product Development: Software Development and Updates 3	2	2020	3	2020
Product Development: Software Development and Updates 4	2	2021	3	2021
Test and Evaluation: Experimental Test	3	2016	3	2016
Test and Evaluation: Developmental Test	2	2017	2	2017
Production: Low Rate Initial Production	4	2017	4	2017
Production: Full Rate Production	3	2018	3	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads				Project (Number/Name) 5502 / Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
5502: Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)	0.000	0.000	3.682	5.119	-	5.119	5.824	3.146	1.016	1.039	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The UAS Payloads program will develop and integrate a Synthetic Aperture Radar (SAR) with Motion Target Indicator (MTI) for Marine Corps small tactical UASs. This capability fills current capability gaps for the Marine Corps Intelligence, Surveillance and Reconnaissance (ISR) mission and will allow Marine Corps ISR assets to locate and track ground targets that cannot effectively be located or tracked with the current ground based sensor technology.

The ability to locate and track moving ground targets from small tactical UAV is an essential capability that facilitates the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations.

The SAR/MTI payload will leverage payloads previously developed by other Services and/or DoD laboratories to reduce cost and minimize schedule. This project continues efforts started in Program Element 0305242M Project 2298.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	0.000	2.515	3.655	0.000	3.655
Articles:	-	-	-	-	-
FY 2015 Accomplishments: N/A					
FY 2016 Plans: - Continue SAR/MTI payload component development, in preparation for integrated payload development in FY17.					
FY 2017 Base Plans: - Complete SAR/MTI payload development and initiate integrated payload development.					
FY 2017 OCO Plans: N/A					
Title: Management Services	0.000	0.225	0.225	0.000	0.225
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M I (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5502 I Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: - Complete refinement and documentation of acquisition strategy. - Initiate mapping of payload requirements to specifications. - Initiate development of an integrated master schedule.</p> <p>FY 2017 Base Plans: - Complete mapping of payload requirements to specifications. - Complete development of an integrated master schedule. - Initiate engineering required for flight clearances.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Support</p> <p align="right">Articles:</p>	0.000 -	0.942 -	1.239 -	0.000 -	1.239 -
<p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: - Initiate development of SAR/MTI payload software. - Initiate engineering analysis of alternatives for SAR/MTI payload components.</p> <p>FY 2017 Base Plans: - Complete development of SAR/MTI payload software. - Complete engineering analysis of alternatives for SAR/MTI payload components.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	3.682	5.119	0.000	5.119

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5502 / Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PMC/4787: UAS Payloads	0.000	0.000	2.971	-	2.971	7.057	4.072	0.000	0.000	0.000	14.100

Remarks

D. Acquisition Strategy

The UAS Payload program utilizes a Hybrid Acquisition Model of Incremental/Spiral approach that leverages upon work conducted by various government laboratories in order to field capability that meet threshold requirements, and facilitates the six functions of Marine Corps Aviation and the Marine Corps Intelligence Surveillance, and Reconnaissance Enterprise across the range of military operations.

E. Performance Metrics

Validation of funding, derived requirements, project risks, cost and schedule estimates, contracting strategy and achievement of a technology readiness level of a TRL 7 or higher for Program of Record Transition. Successful development of a SIGINT payload, completion of DT/OT, and integration onboard a Marine Corps small tactical UAV.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5502 / Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	MIPR	AFRL : Dayton, OH	0.000	0.000		1.925	Feb 2016	3.065	Feb 2017	-		3.065	Continuing	Continuing	Continuing
Government Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.450	Nov 2015	0.450	Nov 2016	-		0.450	Continuing	Continuing	Continuing
Governemnt Logistics	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.140	Nov 2015	0.140	Nov 2016	-		0.140	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		2.515		3.655		-		3.655	-	-	-

Remarks
Funding increases from FY16 to FY17 support the experimental testing to be accomplished by AFRL in FY17.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Engineering Support	MIPR	AFRL : Dayton, OH	0.000	0.000		0.692	Feb 2016	0.989	Feb 2017	-		0.989	Continuing	Continuing	Continuing
Contractor Engineering Support	Various	Various : Various	0.000	0.000		0.250	Feb 2016	0.250	Feb 2017	-		0.250	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.942		1.239		-		1.239	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.200	Feb 2016	0.200	Feb 2017	-		0.200	Continuing	Continuing	Continuing
Travel	Various	Various : Various	0.000	0.000		0.025	Feb 2016	0.025	Feb 2017	-		0.025	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.225		0.225		-		0.225	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5502 / Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)
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Proj 5502	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q								
SAR/MTI																																				
Milestones					SRR ◆				PDR ◆		CDR ◆	TRR ◆																								
Product Development					Initial Development				Advanced Development				Correction of Deficiencies				Sft Updates				Sft Updates				Sft Updates											
Test and Evaluation												Exp Test ◆					DT/OT																			
Production																																				

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305242M / (U)Unmanned Aerial Systems (UAS) Payloads	Project (Number/Name) 5502 / Synthetic Aperture Radar/Motion Target Indicator (SAR/MTI)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 5502				
SAR/MTI: Milestones: System Requirements Review	2	2016	2	2016
SAR/MTI: Milestones: Test Readiness Review	1	2018	1	2018
SAR/MTI: Milestones: Product Design Review	2	2017	2	2017
SAR/MTI: Milestones: Critical Design Review	4	2017	4	2017
Product Development: Component Development	2	2016	4	2016
Product Development: Design/Prototype	1	2017	4	2017
Product Development: Correction of Deficiencies	3	2018	4	2018
Product Development: Software Update	2	2019	3	2019
Product Development: Software Update 2	2	2020	3	2020
Product Development: Software Update 3	2	2021	3	2021
Test and Evaluation: Experimental Test	4	2017	4	2017
Test and Evaluation: Developmental and Operational Test	2	2018	2	2018
Production: Low Rate Initial Production	4	2018	4	2018
Production: Full Rate Production	3	2019	3	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	30.000	129.892	181.266	-	181.266	166.651	85.234	43.601	44.538	0.000	681.182
2939: <i>RQ-4 Modernization</i>	0.000	30.000	129.892	181.266	-	181.266	166.651	85.234	43.601	44.538	0.000	681.182

Program MDAP/MAIS Code: 373

Note

MQ-4C Triton RDTE funding for modernization was segregated into a new program element (from PE 0305220N to PE 0305421N) in order to satisfy Congressional direction for increased transparency.

A. Mission Description and Budget Item Justification

MQ-4C Triton Unmanned Air System (UAS). The popular name Triton was approved for the MQ-4C UAS in June 2012, designating the RQ-4 Broad Area Maritime Surveillance (BAMS) UAS as the MQ-4C Triton.

The MQ-4C Triton is a high altitude-long endurance UAS designed to provide Fleet and combatant commanders with persistent maritime Intelligence, Surveillance and Reconnaissance (ISR) of nearly all the world's high-density sea-lanes, littorals, and areas of national interest. Teamed with its manned-capability counterpart, the P-8A, Triton will be a key component of the Navy's family of systems to achieve maritime domain awareness. MQ-4C Triton will seek to leverage Maritime Patrol and Reconnaissance Force manpower, training and maintenance efficiencies.

The MQ-4C Triton features sensors designed to provide near worldwide coverage through a network of five orbits inside and outside continental United States, with sufficient air vehicles to remain airborne for 24 hours a day, 7 days a week, out to ranges of 2000 nautical miles. Onboard sensors will provide detection, classification, tracking and identification of maritime targets and include maritime radar, electro-optical/infra-red and Electronic Support Measures systems. Additionally, the MQ-4C will have a communications relay capability designed to link dispersed forces in the theater of operations and serve as a node in the Navy's FORCEnet strategy. Tactical-level data analysis will occur in real-time at shore-based mission control sites connected to the air vehicle via satellite communications. Further intelligence exploitation can be conducted at Fleet shore-based sites or aboard aircraft carriers and other ships.

The MQ-4C Triton UAS will implement phased capability upgrades within the ongoing acquisition program to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent ISR dominance through the system's lifecycle, and to support the Intelligence, Surveillance, Reconnaissance and Targeting transition plan. System upgrades will include Multi-Intelligence capabilities, Counter Electronic Attack upgrades, a more robust electronic support capability and continue improvements to baseline mission system payloads.

MQ-4C will play a significant role in the Sea Shield and FORCEnet pillars of Sea Power 21. In its Sea Shield role, the system will rely on its key attribute of persistence to provide the supported combatant command or fleet commander with unparalleled situational awareness of the maritime battle space as it develops and sustains the common operational tactical picture. The system will also serve as a Fleet response plan enabler, while acting as a trip wire for intelligence preparation of the

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305421N I (U)RQ-4 Modernization
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environment. Additionally, Triton UAS will be a FORCEnet enabler and relay platform, directly connected to both the Global Information Grid and the Distributed Common Ground System-Navy information backbone.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.000	150.854	220.219	-	220.219
Current President's Budget	30.000	129.892	181.266	-	181.266
Total Adjustments	25.000	-20.962	-38.953	-	-38.953
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-20.962			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	25.000	0.000			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-30.700	-	-30.700
• Rate/Misc Adjustments	0.000	0.000	-8.253	-	-8.253

Change Summary Explanation

Decrease in RQ-4 Modernization by \$7.640M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

FY 2017 decrease primarily due to Air to Air Radar Subsystem development.

Schedule: Multi-INT Follow-on Operational Test and Evaluation scheduled for 3QFY20, Multi-INT IOC scheduled for 2QFY21, and Future Development scheduled 4QFY20 through FY21 have been added to the schedule.

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization				Project (Number/Name) 2939 / RQ-4 Modernization			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2939: RQ-4 Modernization	0.000	30.000	129.892	181.266	-	181.266	166.651	85.234	43.601	44.538	0.000	681.182
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MQ-4C Triton Unmanned Air System (UAS). The MQ-4C Triton is a high altitude-long endurance UAS designed to provide Fleet and combatant commanders with persistent maritime Intelligence, Surveillance and Reconnaissance (ISR) of nearly all the world's high-density sea-lanes, littorals, and areas of national interest. Teamed with its manned-capability counterpart, the P-8A, Triton will be a key component of the Navy's family of systems to achieve maritime domain awareness. MQ-4C Triton will seek to leverage Maritime Patrol and Reconnaissance Force manpower, training and maintenance efficiencies.

The MQ-4C Triton features sensors designed to provide near worldwide coverage through a network of five orbits inside and outside continental United States, with sufficient air vehicles to remain airborne for 24 hours a day, 7 days a week, out to ranges of 2000 nautical miles. Onboard sensors will provide detection, classification, tracking and identification of maritime targets and include maritime radar, electro-optical/infra-red and Electronic Support Measures systems. Additionally, the MQ-4C will have a communications relay capability designed to link dispersed forces in the theater of operations and serve as a node in the Navy's FORCEnet strategy. Tactical-level data analysis will occur in real-time at shore-based mission control sites connected to the air vehicle via satellite communications. Further intelligence exploitation can be conducted at Fleet shore-based sites or aboard aircraft carriers and other ships.

The MQ-4C Triton UAS will implement phased capability upgrades within the ongoing acquisition program to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent ISR dominance through the system's lifecycle, and to support the Intelligence, Surveillance, Reconnaissance and Targeting transition plan. System upgrades will include Multi-Intelligence capabilities, Counter Electronic Attack upgrades, a more robust electronic support capability and continue improvements to baseline mission system payloads.

MQ-4C will play a significant role in the Sea Shield and FORCEnet pillars of Sea Power 21. In its Sea Shield role, the system will rely on its key attribute of persistence to provide the supported combatant command or fleet commander with unparalleled situational awareness of the maritime battle space as it develops and sustains the common operational tactical picture. The system will also serve as a Fleet response plan enabler, while acting as a trip wire for intelligence preparation of the environment. Additionally, Triton UAS will be a FORCEnet enabler and relay platform, directly connected to both the Global Information Grid and the Distributed Common Ground System-Navy information backbone.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product Development	29.008	123.471	168.952	0.000	168.952
Articles:	-	-	-	-	-
Description: MQ-4C Triton Unmanned Air System (UAS) modernization effort for incorporation of phased capability upgrades. The prime contractor is responsible for integration of upgrades into the Triton UAS					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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including associated management, engineering and logistics activities. Capability upgrades will also include development of system payloads directly with original equipment manufacturers.

FY 2015 Accomplishments:

Initiate development of phased capability upgrades, including Multi-Intelligence capabilities in support of the Intelligence, Surveillance, Reconnaissance and Targeting transition plan.

FY 2016 Plans:

Funding increases from FY15 to FY16 to continue development of phased capability upgrades, including Multi-Intelligence capabilities in support of the Intelligence, Surveillance, Reconnaissance and Targeting transition plan. Funding includes sense and avoid radar development and acquisition of development assets for capability upgrades including electro-optical/infra-red, Signals Intelligence (SIGINT) High Band and SIGINT Low Band systems.

FY 2017 Base Plans:

Funding increases from FY16 to FY17 are to support higher levels of development effort for the integration of modernization capabilities as the program approaches Critical Design Review for Multi-INT. FY17 continues development of phased capability upgrades, including Multi-Intelligence capabilities in support of the Intelligence, Surveillance, Reconnaissance and Targeting transition plan. Funding includes sense and avoid radar development and acquisition of development assets for capability upgrades including electro-optical/infra-red, SIGINT High Band and SIGINT Low Band systems.

FY 2017 OCO Plans:

N/A

Title: ILS, Support, Studies & Analysis

Articles:

0.700	1.608	2.385	0.000	2.385
-	-	-	-	-

Description: Integrated Logistics Support, Studies and Analysis.

FY 2015 Accomplishments:

Integrated logistics support, technical engineering services, sensor risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton Unmanned Air System capabilities.

FY 2016 Plans:

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Integrated logistics support, technical engineering services, sensor risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton Unmanned Air System (UAS) capabilities.</p> <p>FY 2017 Base Plans: Funding increases from FY16 to FY17 support the increased effort in the development and integration of logistics and product support considerations for Triton's modernization upgrade. Efforts include integrated logistics support, technical engineering services, sensor reliability and maintainability risk reduction, logistics supportability analyses and environmental planning, modeling and simulation, development of manpower and basing assessments, and development of technical data to support fielding of the MQ-4C Triton UAS modernization capabilities.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Test & Evaluation (T&E)</p> <p align="right">Articles:</p> <p>Description: T&E efforts.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Begin Developmental Testing (DT) and Operational Testing (OT) support activities to allow test and fielding of the MQ-4C Triton UAS phased capability upgrades in accordance with the program schedule.</p> <p>FY 2017 Base Plans: Funding increases from FY16 to FY17 are in support of program increases in DT activities, including integrated test team labor to reduce risk in design and development, to perform subsystem level ground and acceptance testing, obtain the necessary satellite communications required for testing and continue OT support to allow test and fielding of the MQ-4C Triton UAS phased capability upgrades in accordance with the program schedule.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	3.800	8.902	0.000	8.902
	-	-	-	-	-
<p>Title: Program Management (PM)</p> <p align="right">Articles:</p>	0.292	1.013	1.027	0.000	1.027
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<i>Description:</i> PM support and travel.					
<i>FY 2015 Accomplishments:</i> Program Management (PM) support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts.					
<i>FY 2016 Plans:</i> Continue the following: PM support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts.					
<i>FY 2017 Base Plans:</i> Continue the following: PM support and travel, development of milestone and acquisition-related documentation, capability refinement and open systems architecture development, resource justification, affordability assessments and cost analyses, risk reduction and risk management, system integration and interoperability planning, technology maturity reviews, program protection planning, corrosion prevention planning, and joint and international cooperation efforts.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	30.000	129.892	181.266	0.000	181.266

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDT&E/0305220N: (U)MQ-4C Triton	419.242	227.118	111.729	-	111.729	9.021	2.061	0.000	0.000	0.000	3,269.456

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APN-4/044200: RQ-4 UAV (Triton UAV)	67.670	619.662	464.657	-	464.657	570.239	685.950	759.853	748.865	6,569.316	10,486.212
• APN-6/044200: RQ-4 UAV (Triton UAV)	0.000	103.954	114.529	-	114.529	101.659	8.566	9.345	0.000	78.847	416.900
• MILCON/0212176N: Facilities New Footprint - Fleet Ops	0.000	8.296	30.475	-	30.475	0.000	0.000	0.000	0.000	0.000	88.385
• MILCON/0712876N: Facilities New Footprint - Main and Prod	0.000	40.641	0.000	-	0.000	0.000	27.686	0.000	0.000	0.000	68.327
• MILCON/0815976N: Facilities New Footprint - Training	0.000	0.000	41.380	-	41.380	0.000	0.000	0.000	0.000	0.000	79.411
• OMN/1D4D: Weapons Maintenance	0.000	0.000	0.000	-	0.000	29.667	32.365	34.809	35.522	Continuing	Continuing
• OMN/1A4N: Air Systems Support	0.000	0.000	0.000	-	0.000	0.496	0.495	0.495	0.496	Continuing	Continuing
• OMN/1A1A: Mission and Other Flight Operations	0.000	0.000	0.000	-	0.000	2.193	13.990	34.265	192.313	Continuing	Continuing
• MILCON/0805976N: Facilities Restoration and Mod-Training	0.000	2.974	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.974

Remarks
In order to reflect the correct funding profile, the APN-4 "Cost To Complete" should read \$6,595.833 for a total cost of \$10,512.729. The APN-6 "Cost To Complete" should read \$90.500 for a total of \$428.553.

D. Acquisition Strategy

The MQ-4C Triton acquisition approach encompasses delivery of detection, tracking, imaging and data dissemination capabilities at Initial Operational Capability (IOC) with activities to enhance sensor and system performance via phased capability upgrades for post IOC delivery as part of the Triton acquisition program. This approach of phased capability upgrades within the acquisition program enables MQ-4C to pace capability with rapidly evolving technologies and threats to ensure the Navy maintains persistent Intelligence, Surveillance and Reconnaissance dominance through the system's lifecycle.

The MQ-4C Triton program office is pursuing joint efficiency with the Air Force on the Global Hawk Unmanned Aircraft System (UAS). However, the integration of the Triton UAS into the Maritime Patrol Reconnaissance Force and the unique maritime sensors employed dictate a Navy-led acquisition program focused on joint efficiencies, where possible.

E. Performance Metrics

Successfully achieve Milestone C, Integrated Test, Operational Evaluation and IOC.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	C/CPFF	Northrop Grumman : Rancho Bernardo, CA	0.000	24.973	Apr 2015	85.363	Nov 2015	144.351	Nov 2016	-		144.351	276.208	530.895	530.895
Systems Engineering	Various	Various : Various	0.000	1.535	Aug 2015	2.000	Nov 2015	2.957	Nov 2016	-		2.957	3.806	10.298	-
Systems Engineering	WR	NAWC-AD : Patuxent River, MD	0.000	2.500	Jan 2015	11.739	Nov 2015	17.644	Nov 2016	-		17.644	12.801	44.684	-
Primary Hardware Development	SS/FFP	Raytheon : McKinney, TX	0.000	0.000		10.869	Feb 2016	0.500	Nov 2016	-		0.500	2.000	13.369	13.369
Primary Hardware Development	C/CPFF	Sierra Nevada Corporation : Beaver Creek, OH	0.000	0.000		6.000	Apr 2016	3.500	Nov 2016	-		3.500	0.000	9.500	9.500
Primary Hardware Development	C/CPFF	Boeing Argon ST : Fairfax, VA	0.000	0.000		7.500	Feb 2016	0.000		-		0.000	0.000	7.500	7.500
Subtotal			0.000	29.008		123.471		168.952		-		168.952	294.815	616.246	-

Remarks
 In FY16 and FY17, the Product Development budget resources Northrop Grumman for Triton Air to Air Radar Subsystem (AARSS) development and Multi-INT integration design efforts, Raytheon for an Electro-Optical/Infrared (EO/IR) upgrade contract, Sierra Nevada Corporation for high band sensor kits and Boeing Argon for low band sensor kits.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	Various	Various : Various	0.000	0.200	Mar 2015	0.208	Nov 2015	0.260	Nov 2016	-		0.260	1.109	1.777	-
Integrated Logistics Support	Various	Various : Various	0.000	0.000		0.200	Nov 2015	0.251	Nov 2016	-		0.251	3.216	3.667	-
Integrated Logistics Support	WR	NAWC-AD : Patuxent River, MD	0.000	0.500	Jan 2015	1.200	Nov 2015	1.874	Nov 2016	-		1.874	3.202	6.776	-
Subtotal			0.000	0.700		1.608		2.385		-		2.385	7.527	12.220	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	Various	Various : Various	0.000	0.000		0.650	Nov 2015	0.663	Nov 2016	-		0.663	5.302	6.615	-
Developmental Test & Evaluation	WR	NAWC-AD : Patuxent River, MD	0.000	0.000		1.900	Nov 2015	5.667	Nov 2016	-		5.667	17.687	25.254	-
Operational Test & Evaluation	Various	Various : Various	0.000	0.000		0.250	Nov 2015	0.500	Nov 2016	-		0.500	7.100	7.850	-
Developmental Test & Evaluation (SATCOMM)	MIPR	DITCO : Various	0.000	0.000		1.000	Nov 2015	2.072	Nov 2016	-		2.072	3.326	6.398	-
Subtotal			0.000	0.000		3.800		8.902		-		8.902	33.415	46.117	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Various : Various	0.000	0.100	Jan 2015	0.163	Nov 2015	0.166	Nov 2016	-		0.166	0.699	1.128	-
Travel	Allot	Various : Various	0.000	0.025	Jan 2015	0.050	Nov 2015	0.045	Nov 2016	-		0.045	0.138	0.258	-
Program Management Support	C/CPFF	Ausley : Lexington Park, MD	0.000	0.167	Jan 2015	0.800	Feb 2016	0.816	Nov 2016	-		0.816	3.430	5.213	5.213
Subtotal			0.000	0.292		1.013		1.027		-		1.027	4.267	6.599	-

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	0.000	30.000	129.892	181.266	-	181.266	340.024	681.182	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2939				
Acquisition Milestones: Milestone C	2	2016	2	2016
Acquisition Milestones: Full Rate Production	2	2018	2	2018
Acquisition Milestones: Initial Operational Capability	3	2018	3	2018
Acquisition Milestones: Multi-INT Initial Operational Capability	2	2021	2	2021
System Development: System Development and Demonstration	1	2015	4	2021
System Development: Phased Capability Upgrades - Multi-INT	2	2015	3	2020
System Development: Future Development	4	2020	4	2021
Test & Evaluation Activities: Integrated Test (Combined/Developmental/Operational)	1	2015	4	2017
Test & Evaluation Activities: Follow-on Integrated Test	4	2018	2	2020
Test & Evaluation Activities: Multi-INT Follow-on Operational Test and Evaluation	3	2020	3	2020
Test & Evaluation Activities: Operational Test Readiness Review	1	2018	1	2018
Test & Evaluation Activities: OPEVAL	2	2018	3	2018
Production Milestones: Contracts: Low Rate Initial Production 1 Contract Award	2	2016	2	2016
Production Milestones: Contracts: Low Rate Initial Production 2 Contract Award	2	2017	2	2017
Production Milestones: Contracts: Full Rate Production Lot 3 Contract Award	2	2018	2	2018
Production Milestones: Contracts: Full Rate Production Lot 4 Contract Award	2	2019	2	2019
Production Milestones: Contracts: Full Rate Production Lot 5 Contract Award	2	2020	2	2020
Production Milestones: Contracts: Full Rate Production Lot 6 Contract Award	2	2021	2	2021
Production Milestones: Deliveries: System Demonstration Test Articles Delivery	1	2017	2	2017
Production Milestones: Deliveries: Low Rate Initial Production Lot 1 Delivery	2	2018	1	2019
Production Milestones: Deliveries: Low Rate Initial Production Lot 2 Delivery	2	2019	1	2020
Production Milestones: Deliveries: Full Rate Production Lot 3 Delivery	2	2020	1	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0305421N / (U)RQ-4 Modernization	Project (Number/Name) 2939 / RQ-4 Modernization
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Deliveries: Full Rate Production Lot 4 Delivery	2	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	26.184	4.556	4.757	4.709	-	4.709	5.238	5.280	5.280	5.386	Continuing	Continuing
2222: <i>Modeling & Simulation</i>	26.184	4.556	4.757	4.709	-	4.709	5.238	5.280	5.280	5.386	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element addresses projects under the Navy Modeling and Simulation (M&S) Office. It supports technical and management initiatives directed by Congress, Department of Defense (DoD), Secretary of the Navy (SECNAV), and Chief of Naval Operations (CNO) with the aim of bringing organization, focus, and efficiency to the development and use of M&S throughout the Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S, and represents Navy interests in Joint and other Agency initiatives. It funds efforts to define and coordinate the corporate Navy M&S policy and guidance to evolve an interoperable and reusable core M&S capability consistent with the M&S technical framework prescribed by DoD.

Efforts are organized around three product areas:

- (1) Core Services: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S standards, visibility, and potential reuse across DoD.
- (2) Community Services: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies, standards, VV&A, and reuse within their Community and to ensure that the wider DON and DoD are aware (visibility) of the M&S products and services, initiatives, processes, and standards.
- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.719	4.757	4.979	-	4.979
Current President's Budget	4.556	4.757	4.709	-	4.709
Total Adjustments	-0.163	0.000	-0.270	-	-0.270
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.163	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.270	-	-0.270

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	
<u>Change Summary Explanation</u> The FY 2017 request was reduced by -\$0.270 million to account for the availability of prior year execution balances. Technical: Not applicable. Schedule: Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>				Project (Number/Name) 2222 / <i>Modeling & Simulation</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2222: <i>Modeling & Simulation</i>	26.184	4.556	4.757	4.709	-	4.709	5.238	5.280	5.280	5.386	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element addresses projects under the Navy Modeling and Simulation (M&S) Office. It supports technical and management initiatives directed by Congress, Department of Defense (DoD), Secretary of the Navy (SECNAV), and Chief of Naval Operations (CNO) with the aim of bringing organization, focus, and efficiency to the development and use of M&S throughout the Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S, and represents Navy interests in Joint and other Agency initiatives. It funds efforts to define and coordinate the corporate Navy M&S policy and guidance to evolve an interoperable and reusable core M&S capability consistent with the M&S technical framework prescribed by DoD.

Efforts are organized around three product areas:

- (1) Core Services: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S standards, visibility, and potential reuse across DoD.
- (2) Community Services: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies, standards, VV&A, and reuse within their Community and to ensure that the wider DON and DoD are aware (visibility) of the M&S products and services, initiatives, processes, and standards.
- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: CORE SERVICES	1.638	1.657	1.607	0.000	1.607
Articles:	-	-	-	-	-
Description: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S visibility and potential reuse across DoD. It provides updates to the DoD Enterprise Catalog, M&S Master Plan, and M&S Investment Strategy. This activity supports development of common services, tools, and databases to ensure the integration and connectivity of M&S products employed in Naval assessments, training, acquisition, and among operational communities. It manages and maintains the Navy M&S Information Service (NMSIS), the central Naval M&S information resource to support informed M&S investment decision making across DON. It implements and manages the Modeling and Simulation (M&S) Quality Assurance (VV&A) process and guidelines for implementing for modeling, simulation, and data. It					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

reviews both new and legacy M&S VV&A plans and reports and develops and maintains the Naval M&S VV&A repository. It establishes and implements a VV&A training curriculum for developers and Accreditation Agents.

FY 2015 Accomplishments:

- Full NATO country review of NMSG-100 technical report on Resource Discovery and Access required prior to publishing final report.
- Assist Navy M&S Communities in their efforts to make M&S resources discoverable for reuse to the Global Information Grid Enterprise Service ensuring compliance with DoD Net Centric Data Strategy (dated May 9, 2003) and Directive 8320.02 (Data Sharing in a Net Centric Department of Defense).
- Revisions to documents are required in response to significant advances and changes in both subject areas and to comply with DON (SECNAVINST 5215.1D) and DoD (DoD Instruction 5025.01) regulation. Plans are to promulgate M&S VV&A Instruction (5200.40) and M&S Management (5200.38A), review Navy M&S Policy for coverage gaps new requirements, and assist in the development of an: "A Review of RDT&E M&S Factors in Policy" Current Policy Status Snapshot
- Continue development of the Navy M&S Strategic Plan and articulate a Comprehensive M&S Vision (Echelon 1), and begin Implementing Goals (Echelon 2)

FY 2016 Plans:

- Develop a virtual environment POA&M for SECNAV to cover:
 - * Identifying centers of excellence within the DON, across the DoD, commercial industry.
 - * Develop a strategic plan for the DON on scaling up the use of virtual environments.
- Update the SECNAV Instruction on M&S to enable a more integrated DON approach to M&S
- Help develop core M&S workforce education , especially on contracting language, M&S Support Plans, and user level M&S guidance.
- Provide VV&A, Standards and M&S support to programs, PEOs and other DON activities.
- Collect and make available "best practices" and guides for digital and M&S efforts.

FY 2017 Base Plans:

- Document capabilities of centers of excellence in DON, DoD, and industry virtual environments and make discoverable and usable
- Identify where, and in what conditions, virtual environments demonstrate value and to what levels of fidelity for various use cases.
- Develop a roadmap for the DON that includes the opportunities, risks, and barriers associated with scaling up the use of virtual environments.

FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<ul style="list-style-type: none"> - Update the Verification, Validation and Accreditation (VV&A) Implementation Guide. - Educate the M&S workforce on how to participate in the reuse of core M&S knowledge and efforts. - Provide VV&A, Standards and M&S support to programs, PEOs and other DON activities. - Collect and make available "best practices" and guides for digital and M&S efforts. 					
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FY 2017 OCO Plans:
N/A

Title: COMMUNITY SERVICES	1.769	2.416	2.299	0.000	2.299
Articles:	-	-	-	-	-

Description: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies and standards within their Community and to ensure that the wider Navy is aware of the M&S products and services, initiatives, processes, and standards (visibility). It promotes M&S reuse through cooperative Community M&S activities which identify and prioritize M&S capability requirements between and across Communities. It also provides an M&S degree program through the Naval Postgraduate School (NPS), Modeling Virtual Environments and Simulation (MOVES) curriculum which qualifies officers to fill 6202-P coded billets. Financial support for thesis and dissertation efforts done by the students is covered by this funding. Topics are broad M&S topics of concern which are prioritized based on how they meet the requirements across, between and within the M&S Communities.

FY 2015 Accomplishments:

- Coordinate with Naval Systems Commands and other solution providers to ensure the required system-of-systems training capability is delivered across the system life-cycle to enable effective Fleet training in an integrated live and synthetic training venue. Examples of mission areas, capabilities that require an integrated venue to effectively train are Navy Integrated Fire Control - Counter Air (NIFC-CA) and Anti-Access, Area Denial (A2AD).
- Continue to research expanded use of commercial game technology as a cost saving measure and to speed development in M&S education and training.

FY 2016 Plans:

- Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions
- Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- VV&A of Real Time Propagation Loss Model / WaveQ3d will progress to prototype / demonstration implementation model in order to validate its effectiveness and efficiency in a simulation infrastructure.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - In conjunction with DoD and the other Services, develop M&S Enterprise Services for all to use and reuse. - Develop a collaboration environment for use in identifying components and innovative concepts to develop the DON Virtual Environment. - Collaborate on common development environment and maintain successes and lessons learned so follow-on efforts and users may benefit from them. - Assist labs in obtaining the necessary connectivity to participate in the shared digital environments. - Integrate model based System Engineering digital tools and processes. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - In conjunction with DoD and the other Services, develop M&S Enterprise Services for all to use and reuse. - Develop a guide on recommended contract language for M&S efforts to ensure appropriate simulation and data government rights and that the industry deliverables will plug into the government framework. - Develop and test M&S Enterprise solutions for the users and developers of M&S in and for the DON. - Improve collaboration environment for use in identifying components and innovative concepts to develop the DON. Virtual Environment and evolve it to meet projected program and M&S users' requirements. - Collaborate on Common Development Environment and maintain successes and lessons learned so follow-on efforts and users may benefit from them. - Assist labs in obtaining the necessary connectivity to be participate in the shared digital environments. - Continue Integration of model based System Engineering digital tools and processes. <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	4.556	4.757	4.709	0.000	4.709

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation

D. Acquisition Strategy

This is a non-ACAT program. The focus of the Navy Modeling and Simulation (M&S) Office is to facilitate and enable the efficient use of M&S by minimizing duplication of M&S efforts and maximize the reuse of M&S and data.

E. Performance Metrics

This program supports efforts to define, develop, and utilize M&S technologies, standards and techniques in DON and joint programs across a wide range of disciplines and technical arenas. As such, performance metrics are specific to individual projects initiated under this program element. Representative examples of performance criteria for M&S support include the following: VV&A of deployed M&S systems to support Fleet and Force missions and assessments; degree of composability and adaptability of system architectures employed M&S systems; ability of M&S systems to replicate and permit recreation of force or system interactions that otherwise would be performed by more labor-intensive or expensive personnel, forces, or elements; degree to which M&S frameworks would permit rapid integration and employment of analytic capabilities for the analysis and documentation of warfighter missions, weapons systems or Tactics, Techniques and Procedures (TT&P); and ability of a specific M&S technology or technique to meet the requirements specified in an individual project supported by this program.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DoD Support	WR	SPAWAR : Charleston, SC	0.383	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
NMSO Director	WR	SPAWAR : Charleston, SC	1.038	0.258	Jan 2015	0.263	Jan 2016	0.265	Jan 2017	-		0.265	0.000	1.824	-
NMSO Data Archiving Effort	WR	NAVAIR : Pax River, MD	0.364	0.069	Mar 2015	0.070	Mar 2016	0.072	Mar 2017	-		0.072	0.000	0.575	-
DREN Connectivity	WR	SPAWAR : Charleston, SC	0.029	0.007	Mar 2015	0.007	Mar 2016	0.009	Mar 2017	-		0.009	0.000	0.052	-
M & S Data Lead	WR	SPAWAR : Charleston, SC	0.392	0.105	Jan 2015	0.243	Jan 2016	0.245	Jan 2017	-		0.245	0.000	0.985	-
NMSIS Web Presence	WR	SPAWAR : Charleston, SC	0.566	0.165	Jan 2015	0.165	Jan 2016	0.167	Jan 2017	-		0.167	0.000	1.063	-
VV&A Standards & Support	WR	SPAWAR : Charleston, SC	0.994	0.235	Mar 2015	0.106	Mar 2016	0.108	Mar 2017	-		0.108	0.000	1.443	-
Plans & Policies	WR	SPAWAR : Charleston, SC	1.128	0.400	Jan 2015	0.400	Jan 2016	0.334	Jan 2017	-		0.334	0.000	2.262	-
DON Mission Level Gap Analysis	WR	NAVAIR : Pax River, MD	1.100	0.000		0.000		0.000		-		0.000	0.000	1.100	-
M&S Interoperability Initiative	WR	NAVAIR : Pax River, MD	0.950	0.000		0.000		0.000		-		0.000	0.000	0.950	-
M&S Interoperability Initiative	WR	SPAWAR : Charleston, SC	0.649	0.000		0.000		0.000		-		0.000	0.000	0.649	-
Navy Training Test Harness	WR	NAWC TSD : Orlando, FL	0.375	0.000		0.000		0.000		-		0.000	0.000	0.375	-
CSP for NTI	WR	NAWC TSD : Orlando, FL	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Navy STORM	WR	NAWC : Pax River, MD	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
USMC STORM	WR	MCCDC : Quantico, VA	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
M&S Services	WR	SPAWAR : Charleston, SC	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Data Assistant	WR	SPAWAR : Charleston, SC	0.544	0.185	Jan 2015	0.189	Jan 2016	0.191	Jan 2017	-		0.191	0.000	1.109	-
Navy VV&A Lead	WR	NAVAIR : Pax River, MD	0.000	0.214	Oct 2014	0.214	Oct 2015	0.216	Oct 2016	-		0.216	0.000	0.644	-
Subtotal			9.509	1.638		1.657		1.607		-		1.607	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RDA POC	WR	NAVAIR : Pax River, MD	0.662	0.349	Jan 2015	0.349	Jan 2016	0.352	Jan 2017	-		0.352	0.000	1.712	-
RDA IDS (#1&3)	WR	SPAWAR : Charleston, SC	1.341	0.165	Jan 2015	0.215	Jan 2016	0.218	Jan 2017	-		0.218	0.000	1.939	-
Training IDS (#1)	WR	SPAWAR : Charleston, SC	0.984	0.214	Mar 2015	0.214	Mar 2016	0.217	Mar 2017	-		0.217	0.000	1.629	-
Training IDS (#2)	WR	SPAWAR : Charleston, SC	0.498	0.232	Jan 2015	0.232	Jan 2016	0.235	Jan 2017	-		0.235	0.000	1.197	-
Analysis IDS (#1)	WR	SPAWAR : Charleston, SC	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Analysis IDS (#2)	WR	SPAWAR : Charleston, SC	0.058	0.000		0.000		0.000		-		0.000	0.000	0.058	-
IDS Training and Coordination	WR	SPAWAR : Charleston, SC	0.044	0.000		0.000		0.000		-		0.000	0.000	0.044	-
USMC IDS	WR	MCCDC : Quantico, VA	0.420	0.110	Mar 2015	0.151	Jan 2016	0.154	Jan 2017	-		0.154	0.000	0.835	-
MOVES	WR	NPS : Monterrey, CA	3.245	0.109	Jan 2015	0.630	Jan 2016	0.492	Jan 2017	-		0.492	0.000	4.476	-
RDA M&S Forum	WR	NAVAIR : Pax River, MD	1.500	0.375	Jan 2015	0.337	Jan 2016	0.340	Jan 2017	-		0.340	0.000	2.552	-
NMSO Technical Support	WR	SPAWAR : Charleston, SC	0.483	0.000		0.000		0.000		-		0.000	0.000	0.483	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Simulated Shipboard FMVS	WR	NWDC : Norfolk, VA	0.365	0.000		0.000		0.000		-		0.000	0.000	0.365	-
M&S Officer Postgraduate Ed	WR	SPAWAR : SSC-LANT	0.360	0.215	Jan 2015	0.288	Jan 2016	0.291	Jan 2017	-		0.291	0.000	1.154	-
Subtotal			9.960	1.769		2.416		2.299		-		2.299	0.000	16.444	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Need Item Text	C/BA	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Subtotal			0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Standard Interfaces for Virtual World	WR	NAVAIR : Pax River, MD	2.142	0.110	Feb 2015	0.100	Feb 2016	0.107	Feb 2017	-		0.107	0.000	2.459	-
Architecture Management Integration Environment	WR	NAVAIR : Pax River, MD	1.628	0.340	Feb 2015	0.200	Feb 2016	0.310	Feb 2017	-		0.310	0.000	2.478	-
Semantic and Structural Metadata Schema	WR	NAVAIR : Pax River, MD	0.562	0.000		0.000		0.000		-		0.000	0.000	0.562	-
Semantic and Structural Metadata Schema	WR	SPAWAR : Charleston, SC	0.289	0.000		0.000		0.000		-		0.000	0.000	0.289	-
Tactical Operational Software Environment (TOSEE)	WR	NAVAIR : TSD, Orlando	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	-
Cross Cultural Competence in OPS Environment	WR	NAVAIR : TSD, Orlando	0.350	0.000		0.000		0.000		-		0.000	0.000	0.350	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support	Project (Number/Name) 2222 / Modeling & Simulation
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Framework for Assessing Cost and Technology (FACT)	WR	MCCDC : Quantico, VA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Intergrated Air/Missile Defense IAMD	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Measuring Immersion Training	WR	MCCDC : Quantico, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
VVA of Real Time Propagation Loss Model	WR	ONR : Arlington, VA	0.294	0.294	Feb 2015	0.000		0.000		-		0.000	0.000	0.588	-
Navy M&S Education Program	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Sensor Federate	WR	ONR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Contracting Language for M&S	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
VCE for CPD&T	MIPR	WHS : Arlington, VA	0.300	0.000		0.000		0.000		-		0.000	0.000	0.300	-
Navy VV&A Lead	WR	NAVAIR : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
LVC Training Enviroment Tech Advisor	WR	NAVSEA JHU : Wash. DC	0.000	0.285	Jan 2015	0.288	Jan 2016	0.289	Jan 2017	-		0.289	0.000	0.862	-
Human Anatomy Motion Tracking & Display	WR	MARCORSYSCOM : Arlington, VA	0.000	0.000		0.096	Jan 2016	0.097	Jan 2017	-		0.097	0.000	0.193	-
CapabilityModule Enhancement	WR	NAVAIR : Pax River	0.000	0.120	Feb 2015	0.000		0.000		-		0.000	0.000	0.120	-
Subtotal			6.715	1.149		0.684		0.803		-		0.803	0.000	9.351	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.184	4.556	4.757	4.709	-	4.709	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>
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Proj 2222	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				

2017DON - 0308601N - 2222

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0308601N / <i>Modeling & Simulation Support</i>	Project (Number/Name) 2222 / <i>Modeling & Simulation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2222				
Incorporate Best Practices in Contracting in DON	4	2015	4	2016
Publish Contracting Best Practices Guide	4	2015	4	2015
Change Culture through Education, Outreach and Training	1	2015	4	2018
Host Summit for Face to Face Workshop on Issues and Reuse	1	2015	4	2018
Incorporate Learning courses in SYSCOM Workforce Education	1	2015	4	2018
Coordinate across DON& other Services/DoD to develop a Support Plan	1	2015	3	2015
Establish draft MSSP Policy among the Services/DoD	2	2015	3	2016
Draft a Common Digital Environment for (and other) social efforts	1	2015	3	2018
Coordinate quarterly Fleet Training Integration Panels	1	2015	1	2018
Plan Quarterly Fleet Training Requirements Management Group	1	2015	3	2018
Develop Forums across all the Communities	1	2015	1	2015
JBUS AIME Integration to fix future LVC training integration issues	1	2015	1	2016
Aegis, Development Environment_AIME integration	1	2015	2	2016
Integrate NICAP and PEO IWS Portal, knowledge retention and discovery	3	2015	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	153.681	20.678	24.185	49.322	-	49.322	45.174	34.694	34.212	25.109	Continuing	Continuing
3030: <i>FA-18 SLAP</i>	139.224	13.499	19.685	38.277	-	38.277	28.291	27.897	23.921	17.816	Continuing	Continuing
3182: <i>T-45 SLAP</i>	14.457	7.179	4.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.136
3384: <i>MH-60 SLAP</i>	0.000	0.000	0.000	11.045	-	11.045	16.883	6.797	10.291	7.293	Continuing	Continuing

Note

The MH-60 Service Life Assessment Program (SLAP) is not a new start in FY 2017. This work was commenced under PE 0604212N Other Helicopter Development, Project Unit 2415 H-60 Development.

A. Mission Description and Budget Item Justification

Decrease in Depot Maintenance (NON-IF) by \$0.466M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

3030: A significant portion of the F/A-18 airframe is believed to have additional inherent capability and a life extension may be possible for many portions of the airframe. The F/A-18 Service Life Assessment Program (SLAP) is assessing the structural and subsystem conditions of the F/A-18 fleet in order to determine what modifications are necessary to extend the aircraft designed life limits to allow it to achieve Chief of Naval Operations inventory requirements. Without SLAP and the follow on Service Life Extension Program, aircraft are retired from the USN inventory when a design service life metric is reached. The FY17 budget request increased due to Resource Sponsor funding for increased depot capacity, Engineering Change Proposal (ECP) development, kit creation and installation to support service life extensions. RDTE funds will support aircraft teardown to validate SLAP analysis, identify unknown fatigue areas and assess the aircraft's material condition.

3182: The T-45 SLAP is assessing the subsystem condition of the T-45 fleet in order to determine what modifications are necessary to extend the aircraft subsystem design life limits to allow it to meet Chief of Naval Air Training Pilot and Naval Flight Officer training requirements through 2035.

3384: The MH-60 SLAP is assessing the primary aircraft structure and subsystem condition of the MH-60S fleet in order to determine what efforts are necessary to extend the aircraft design life limits to allow it to meet Chief of Naval Operations operational inventory requirements through FY 2035. Without SLAP, aircraft are retired from the USN inventory when design service life limits are reached directly impacting fleet surface warfare, mine countermeasures, search and rescue, and vertical replenishment operational capabilities.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	21.168	24.185	19.386	-	19.386
Current President's Budget	20.678	24.185	49.322	-	49.322
Total Adjustments	-0.490	0.000	29.936	-	29.936
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.490	0.000			
• Program Adjustments	0.000	0.000	16.173	-	16.173
• Rate/Misc Adjustments	0.000	0.000	13.763	-	13.763

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)				Project (Number/Name) 3030 / FA-18 SLAP			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3030: FA-18 SLAP	139.224	13.499	19.685	38.277	-	38.277	28.291	27.897	23.921	17.816	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The F/A-18 Service Life Assessment Program (SLAP) is assessing the structural and subsystem conditions of the F/A-18 fleet in order to determine what modifications are necessary to extend the aircraft designed life limits to allow it to achieve Chief of Naval Operations (CNO) inventory requirements. The goal of the F/A-18 SLAP program is to identify critical structures and components that can achieve the extended service life limit goals. SLAP consists of structural analyses of the main landing gear, arresting hook and catapult back-up structures, vertical tails, wings and fuselage. A second effort is to assess the subsystem components (hydraulics, wiring, actuators, etc) to identify over and above inspections, overhaul intervals or replacement schedules to fly past design of 6,000 hours. The current life limits for the F/A-18 E/F are 6,000 Flight Hours (FH), 2,250 catapults/arrestments (Cat/Traps) and 15,750 total landings. The F/A-18 SLAP program of record states the SLAP goals as 12,000 FH, 3,500 Cat/Traps and 22,500 total landings. The primary objective of F/A-18 SLAP is to determine if the stated SLAP goals are feasible. An increase in total landings and flight hours would allow the F/A-18 to meet CNO inventory requirements. The requirements are integrated with the Joint Strike Fighter planned introduction. This effort is required to be conducted for these airframes and subsystems to ascertain what actions and modifications must be taken to safely operate each system beyond its designed life until the targeted end of service life.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: F/A-18 SLAP	13.499	19.685	38.277	0.000	38.277
Articles:	-	-	-	-	-
Description: The current design life limits do not support USN inventory requirements. Funding supports assessing the structural condition of the F/A-18 fleet in order to determine what modifications are necessary to extend the aircraft designed life limits to allow it to achieve CNO inventory requirements.					
FY 2015 Accomplishments: Continued stress analysis of numerous data points to provide exploitation of complete structural fatigue testing with the expectation of extending the current service life of F/A-18E/F from the design limits to the SLAP goals. Locations encompass the forward, center and aft fuselage, inner and outer wings, as well as landing gear.					
FY 2016 Plans: Continue stress analysis of numerous data points to provide exploitation of complete structural fatigue testing with the expectation of extending the current service life of F/A-18E/F from the design limits to the SLAP goals. Locations encompass the forward, center and aft fuselage, inner and outer wings, as well as landing gear.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3030 / <i>FA-18 SLAP</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue stress analysis of numerous data points to provide exploitation of complete structural fatigue testing with the expectation of extending the current service life of F/A-18E/F from the design limits to the SLAP goals. Locations encompass the forward, center and aft fuselage, inner and outer wings, as well as landing gear. Sonic and Thermal analysis will be performed on numerous structural and composite skin locations to assess elevated temperatures with the expectation of extending the current life of the F/A-18E/F Super Hornet. Aircraft Teardown assessments will be performed to analyze the fatigue and material condition of fleet aircraft to determine what modifications or inspections are required to extend the current life of the aircraft.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	13.499	19.685	38.277	0.000	38.277

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0525: <i>F-18 Series (OSIP 020-14)</i>	10.940	11.057	34.521	-	34.521	60.861	93.704	92.909	100.884	1,932.653	2,347.430

Remarks

D. Acquisition Strategy

The Service Life Assessment Program (SLAP) program employs sole source contracts with Boeing, the aircraft prime manufacturer. SLAP further decomposes program of record goals into smaller discrete steps, analyzing requirements to extend flight hours (FH) from 6,000 to 9,000 first. These analyses will provide the raw engineering data to develop aircraft modifications to extend total aircraft landings, Cat/Traps, and FH. The F/A-18 SLAP Program consists of two major engineering efforts: the aircraft structural assessment and the aircraft subsystems assessment. Both efforts are broken into multiple phases which develop tools and models, assess current aircraft usage, and develop concepts to extend aircraft life to meet CNO objectives. The program will combine exploitation of complete structural fatigue testing and actual fleet usage with the expectation of extending the service life of the F/A-18 aircraft. Conducting F/A-18 SLAP to study the aircraft lifetime will provide a better estimate of aircraft service life and a follow on Service Life Extension Program (SLEP).

E. Performance Metrics

The F/A-18 SLAP provides an assessment of aircraft structure fatigue life as affected by flight maneuver, Cat/Traps and landings, based on actual usage and identifies the efforts required to extend the aircraft life to SLAP goals. During SLAP Structures Phase A (FY08-FY13) tools and modeling necessary to assess usage and fatigue life are developed. During SLAP Structures Phase B (FY11-FY18) specific structural locations which do not meet SLAP goals are identified and analyzed. Subsystem SLAP is also initiated concurrently with Structures Phase (B). A Flight Control Surface SLAP, SLEP retrofit concepts and repairs for deficient locations are developed

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
1319 / 7	PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	3030 / <i>FA-18 SLAP</i>

during SLAP Structures and Sub-Systems Phase C (FY14-FY21). SLAP is followed by the SLEP during which the actual retrofit and repairs are performed under OSIP 020-14 established in FY14.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3030 / FA-18 SLAP
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development SLAP F/A-18E-F	SS/CPFF	Boeing : St. Louis, MO	85.228	9.281	Dec 2014	15.630	Dec 2015	34.883	Dec 2016	-		34.883	Continuing	Continuing	Continuing
Prior Year Prod Dev cost no longer funded in FYDP	SS/CPFF	Boeing : St. Louis, MO	28.775	0.000		0.000		0.000		-		0.000	0.000	28.775	28.775
Subtotal			114.003	9.281		15.630		34.883		-		34.883	-	-	-

Remarks
FY17 funding provided to increase the F/A-18 E/F depot capacity.

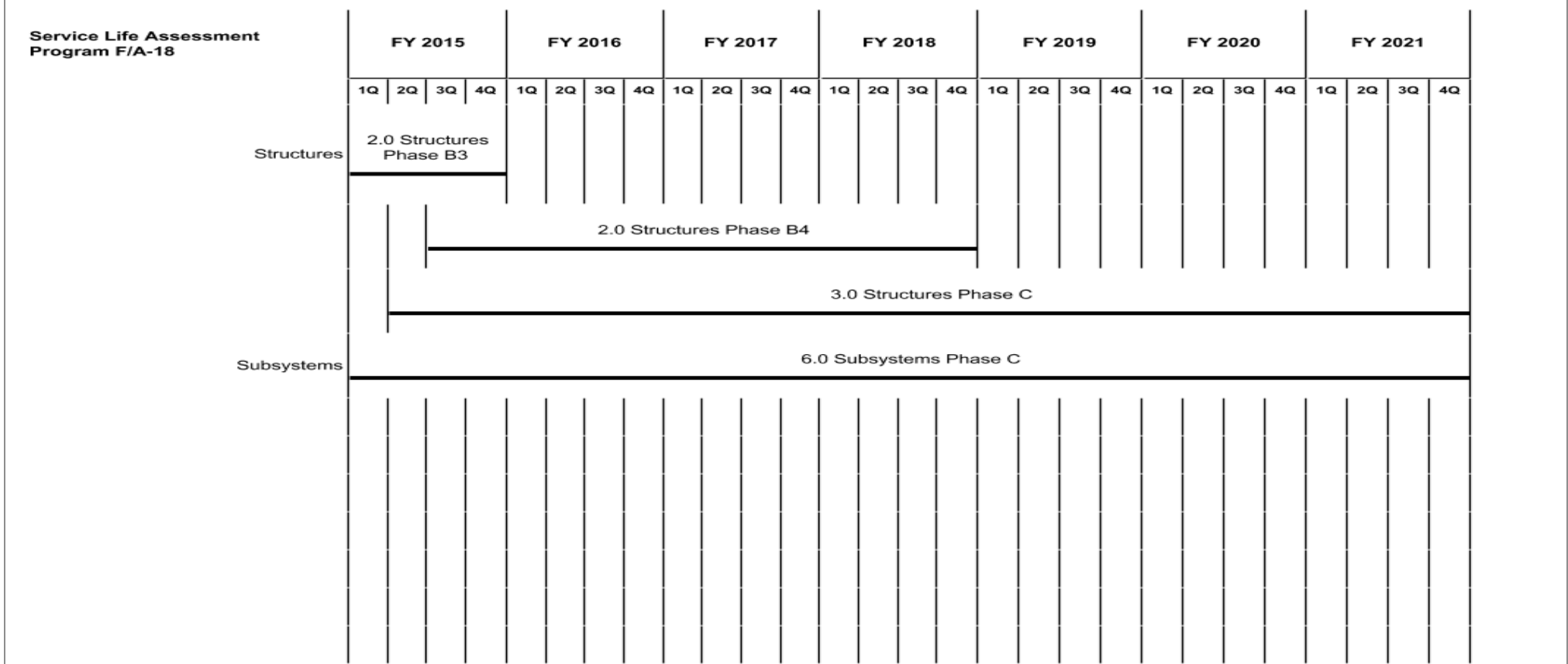
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SLAP Inventory Model	WR	ONR : Arlington, VA	6.525	0.000		0.000		0.000		-		0.000	0.000	6.525	-
SLAP F/A-18 E/F	WR	NAWCAD : Patuxent River, MD	7.015	0.795	Dec 2014	0.795	Dec 2015	0.586	Dec 2016	-		0.586	Continuing	Continuing	Continuing
SLAP F/A-18 E/F	WR	FRC Southwest : San Diego, CA	5.187	0.693	Dec 2014	0.693	Dec 2015	0.766	Dec 2016	-		0.766	Continuing	Continuing	Continuing
Subtotal			18.727	1.488		1.488		1.352		-		1.352	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Test & Evaluation - SLAP E/F	WR	NAWCAD : Pax River, MD	0.657	0.157	Dec 2014	0.157	Dec 2015	0.157	Dec 2016	-		0.157	Continuing	Continuing	Continuing
Subtotal			0.657	0.157		0.157		0.157		-		0.157	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3030 / FA-18 SLAP
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2017PB - 0702207N - 3030

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3030 / <i>FA-18 SLAP</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Service Life Assessment Program F/A-18				
Structures: 2.0 Structures Phase B3	1	2015	4	2015
Structures: 2.0 Structures Phase B4	3	2015	4	2018
Structures: 3.0 Structures Phase C	2	2015	4	2021
Subsystems: 6.0 Subsystems Phase C	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)				Project (Number/Name) 3182 / T-45 SLAP			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3182: T-45 SLAP	14.457	7.179	4.500	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.136
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

3182: The T-45 aircraft structure is currently fatigue limited to 14,400 flight hours based on initial full-scale fatigue tests conducted from 1992-1996. This service life limit prevents the T-45 fleet from meeting Integrated Production Plan (IPP), previously Pilot Training Requirements, past 2025. Recent studies have determined that the fleet squadrons have not been flying the T-45 aircraft as aggressively as the initial fatigue studies predicted. These studies demonstrate that the 14,400 flight hour service life can likely be extended, with a Service Life Extension Program (SLEP), to 21,600 flight hours, which will support meeting IPP until 2035. A T-45 Structural Service Life Assessment Program (SLAP) was completed in February 2012. The results are being used to provide guidance on what structural areas to SLEP. In order for the T-45 to meet IPP until 2035, it is also necessary to assess the sub-systems of the T-45 in their ability to remain viable. Beginning in FY13, the T-45 sub-systems SLAP effort will assess the sub-system condition of the T-45 fleet in order to determine sub-system modifications and/or redesign necessary to extend the aircraft designed service life to support IPP and Naval Flight Officer Training Requirements (NTR) until 2035. This sub-system assessment will be based on the updated fleet aircraft usage spectrum and future predicted training missions of the T-45 aircraft. The assessment will address all critical sub-systems required and their ability to maintain IPP/NTR until 2035, analysis and studies will be conducted to outline improvements, assess manufacturing capabilities, prototype redesign and test of sub-systems for trainer aircraft. The original funding within the T-45 SLAP budget programmed for T-45 tail hook has been absorbed into the overarching SLAP effort due to the success of T-45 additional tail hook life extension efforts.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: T-45 SLAP	7.179	4.500	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Funding supports conducting a Subsystem SLAP to determine modifications necessary to extend service life through 2035.					
FY 2015 Accomplishments: Continue Subsystem SLAP activities and engineering studies with the expectation of extending the T-45 service life to 2035.					
FY 2016 Plans: Complete the Subsystem SLAP activities and engineering studies with the expectation of extending the T-45 service life to 2035.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3182 / <i>T-45 SLAP</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2017 OCO Plans:					
N/A					
Accomplishments/Planned Programs Subtotals	7.179	4.500	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/05690: <i>T-45 Series OSIP 008-95/022-14</i>	26.338	26.257	29.449	-	29.449	41.087	38.560	53.094	57.444	306.813	824.516

Remarks

Prior years were budgeted under OSIP 008-95. Fiscal years 2014 and out are funded under OSIP 022-14

D. Acquisition Strategy

The Subsystem SLAP is a sole source contract effort with Boeing, the aircraft prime contractor. SLAP consists of an analysis of the aircraft subsystems (e.g., Global Positioning System Inertial Navigation Assembly or Mission Data Processor). The analysis will facilitate the future development of subsystem modifications and/or redesigns necessary to extend their life until 2035. The original funding within the T-45 SLAP budget programmed for T-45 tail hook has been absorbed into the overarching SLAP effort due to the alternate path success of T-45 tail hook life extension efforts.

E. Performance Metrics

SLAP provides an assessment of aircraft component life as affected by flight maneuver, catapults, arrestments, landings, and obsolescence based on actual usage and identifies the efforts required to extend the aircraft life to SLAP goals (2035). Effort delineates tasking incrementally to include; Tools and modeling necessary to assess usage and life are developed, specific designs which do not meet SLAP goals are identified and analyzed. Retrofit concepts and redesigns for problem areas are developed, followed by the Service Life Extension Program during which the actual retrofits are undertaken.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3182 / T-45 SLAP
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prod Dev SLAP T-45A/C	SS/CPFF	Boeing : St. Louis, MO	6.929	3.952	Jan 2015	3.500	Nov 2015	0.000		-		0.000	0.000	14.381	14.381
Prod Dev SLAP T-45A/C NACES	C/FFP	Martin Baker : United Kingdom	0.000	0.450	Sep 2015	0.000		0.000		-		0.000	0.000	0.450	0.450
Subtotal			6.929	4.402		3.500		0.000		-		0.000	0.000	14.831	14.831

Remarks
NACES SLAP product development added in FY 2015

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Technical Support	WR	NAWCAD : Patuxent River, MD	3.016	1.419	Jan 2015	0.500	Nov 2015	0.000		-		0.000	0.000	4.935	-
Engineering Technical Support	WR	NADEP : Jacksonville, FL	1.920	0.220	Jan 2015	0.180	Nov 2015	0.000		-		0.000	0.000	2.320	-
Engineering Technical Support	WR	NAWCAD : Various	0.961	0.180	Jan 2015	0.180	Nov 2015	0.000		-		0.000	0.000	1.321	-
SLAP Engineering Study	SS/BOA	JHU/APL : Laurel, MD	1.289	0.680	Jan 2015	0.120	Feb 2016	0.000		-		0.000	0.000	2.089	2.089
SLAP ETS Support	SS/BOA	ASI : Virginia Beach, VA	0.000	0.158	May 2015	0.000		0.000		-		0.000	0.000	0.158	0.158
Subtotal			7.186	2.657		0.980		0.000		-		0.000	0.000	10.823	-

Remarks
In FY15 \$1.435 realigned from NAWCAD to JHU/APL for SLAP Engineering Study requirements, SLAP ETS Support, and the Product Development line.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3182 / T-45 SLAP
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T-45 SLAP	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Product Development																																
	1.0 Product Development																															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3182 / T-45 SLAP

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
T-45 SLAP				
Product Development: SLAP T-45C	1	2015	2	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3384 / MH-60 SLAP
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3384: MH-60 SLAP	0.000	0.000	0.000	11.045	-	11.045	16.883	6.797	10.291	7.293	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MH-60 Service Life Assessment Program (SLAP) is assessing the primary aircraft structure and subsystem condition of the MH-60S fleet in order to determine what efforts are necessary to extend the aircraft design life limits to allow it to meet Chief of Naval Operations (CNO) operational inventory requirements through FY 2035. The goal of the MH-60S SLAP program is to identify critical structures, components, and subsystems that can achieve the extended service life limit goals. The current life limits for the MH-60S is 10,000 hours, however, a full scale fatigue test was never conducted and therefore, the MH-60S is in an on-condition state requiring additional structural inspections beginning at 6,500 hours.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: MH-60 SLAP	0.000	0.000	11.045	0.000	11.045
Articles:	-	-	-	-	-
Description: The current design life limits do not support United States Navy (USN) inventory requirements through FY 2035. Funding supports assessing the structural and subsystem condition of the MH-60S fleet in order to determine what modifications are necessary to extend the aircraft designed life limits to allow it to achieve CNO inventory requirements through FY 2035.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Collect aircraft historical regime and usage data for assessment and initiate airframe external loads analysis and fatigue analysis. Perform analytical service life risk assessments of aircraft subsystems, develop initial dispositions for safety critical items.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	11.045	0.000	11.045

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3384 / <i>MH-60 SLAP</i>

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy

The Service Life Assessment Program (SLAP) program employs sole source contracts with Sikorsky, the aircraft prime manufacturer, government engineering and logistics expertise at Naval Air Station (NAS) Patuxent River and the H-60 Fleet Support Team at Cherry Point, NC. Analyses will provide the engineering data to develop aircraft structural, component, and subsystem modifications to extend service life flight hour limits. The MH-60S SLAP consists of two major engineering efforts: the aircraft structural assessment and the aircraft subsystems assessment. Both efforts are broken into multiple phases which develop tools and models, assess current aircraft usage, and develop concepts to extend aircraft life to meet Chief of Naval Operations (CNO) objectives. The program will combine exploitation of complete aircraft teardown inspections and actual historical fleet usage. Conducting MH-60S SLAP to study the aircraft lifetime will provide a better estimate of aircraft service life and is required to determine scope of the follow-on Service Life Extension Program (SLEP).

E. Performance Metrics

The MH-60 SLAP Fatigue Life Analysis (FLA) provides an assessment of aircraft structure fatigue life as affected by flight maneuver and Ground-Air-Ground cycles, based on Government furnished usage spectra and identifies the efforts required to extend the aircraft life to SLAP goals. During the FLA External Loads Analysis (FY 2017), external loads for all fatigue conditions are identified from the three usage spectra. During the FLA Fatigue Analysis (FY 2017-FY 2020), the fatigue analysis results and calculated fatigue lives are documented and areas for future improvements to extend the A/C service life are identified. During the FLA Structural Analysis (FY 2019-FY 2021), static fail-safety analyses of specific airframe sites are conducted to substantiate continued safe flight and identify areas for future service life extensions. Subsystem SLAP Phase B is initiated concurrently with the FLA. During Subsystems SLAP Phase B (FY 2017-FY 2019), analytical service life risk assessments of aircraft subsystems are conducted and initial dispositions for safety-critical items are developed. During Subsystems SLAP Phase C (FY 2019-FY 2020), dispositions of Phase B are executed by performing component tests, aircraft inspections, and assembly teardowns and SLEP dispositions are developed for safety critical components based on new data.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
1319 / 7				PE 0702207N / Depot Maintenance (NON-IF)				3384 / MH-60 SLAP								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Fatigue Life Assessment MH-60S	SS/FFP	Sikorsky : Stratford, CT	0.000	0.000		0.000		6.125	Dec 2016	-		6.125	5.667	11.792	12.000	
Subsystem Life Assessment MH-60S	SS/CPIF	Sikorsky : Stratford, CT	0.000	0.000		0.000		3.000	Dec 2016	-		3.000	8.833	11.833	12.000	
Subtotal			0.000	0.000		0.000		9.125		-		9.125	14.500	23.625	24.000	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SLAP MH-60S	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		1.238	Dec 2016	-		1.238	Continuing	Continuing	Continuing	
SLAP MH-60S	WR	FRC : Various	0.000	0.000		0.000		0.407	Dec 2016	-		0.407	Continuing	Continuing	Continuing	
Eng & Tech Svc (Non FFRDC)	Various	Various : Various	0.000	0.000		0.000		0.101	Dec 2016	-		0.101	0.000	0.101	-	
Subtotal			0.000	0.000		0.000		1.746		-		1.746	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Technical Support SLAP MH-60S	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.055	Dec 2016	-		0.055	Continuing	Continuing	Continuing	
Mgmt Supt Services (Non FFRDC)	Various	Various : Various	0.000	0.000		0.000		0.101	Dec 2016	-		0.101	0.000	0.101	-	
Travel	Various	NAVAIR : Patuxent River, MD	0.000	0.000		0.000		0.018	Dec 2016	-		0.018	0.000	0.018	-	
Subtotal			0.000	0.000		0.000		0.174		-		0.174	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy								Date: February 2016					
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)				Project (Number/Name) 3384 / MH-60 SLAP					
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		11.045		-		11.045	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / Depot Maintenance (NON-IF)	Project (Number/Name) 3384 / MH-60 SLAP
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Proj 3384	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021											
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q								
									External Loads Analysis																											
									Fatigue Analysis																											
																	Structural Analysis																			
									Subsystems Risk Assessments																											
																					Subsystems Dispositions															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0702207N / <i>Depot Maintenance (NON-IF)</i>	Project (Number/Name) 3384 / <i>MH-60 SLAP</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3384				
External Loads Analysis	2	2017	2	2018
Fatigue Analysis	2	2017	2	2020
Structural Analysis	2	2019	2	2021
Subsystems Risk Assessments	2	2017	4	2019
Subsystems Dispositions	2	2019	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	305.763	36.031	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	341.794
1050: <i>Manufacturing Tech</i>	305.763	36.031	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	341.794

A. Mission Description and Budget Item Justification

The Manufacturing Technology (ManTech) program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development and transition of leading edge manufacturing technologies. The ManTech program is executed through a Center of Excellence (COE) strategy. A majority of the COEs are consortium based with only a small group of technical and management personnel at the center. ManTech projects are primarily performed by industry participants that bill the COE which, in turn, bills the Navy which causes a non-traditional financial execution profile for the program. The program therefore does not meet traditional execution benchmarks. The ManTech program, by providing seed funding for the development of moderate to high risk process and equipment technology, permits contractors to upgrade their manufacturing capabilities. Ultimately, the program aims to produce high-quality weapon systems with shorter lead times and reduced acquisition costs.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

For FY 2016 funding has been realigned to new PE 0603680N Manufacturing Technology Program.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	37.169	0.000	0.000	-	0.000
Current President's Budget	36.031	0.000	0.000	-	0.000
Total Adjustments	-1.138	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.138	0.000			

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>				Project (Number/Name) 1050 / <i>Manufacturing Tech</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1050: <i>Manufacturing Tech</i>	305.763	36.031	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	341.794
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The ManTech Program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development of manufacturing technologies. Major areas of endeavor both underway and planned include: advanced manufacturing technology for metalworking, joining, electronics and electro-optics, composites, shipbuilding, and above-the-factory-floor business operations technology. The ManTech Program is aimed at assisting acquisition programs in meeting performance and affordability goals by inserting manufacturing process solutions early into the design phase.

For FY 2016 funds have been realigned to new PE 0603680N Manufacturing Technology Program.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: COMPOSITES PROCESSING AND FABRICATION	3.480	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
<p>Description: The primary technical goal of the Composites Processing and Fabrication activity is improving weapon systems affordability, enhancing weapon system effectiveness and improving reliability / war-fighter readiness through the increased utilization of composite materials and structures. This is being achieved through the development and maturation of affordable, robust manufacturing and assembly processes that fully exploit the benefits of composite materials. Concentration is on affordability for the following platforms: DDG-51, CVN-78 Class Carrier, VIRGINIA Class Submarine (VCS) / OHIO Replacement Program (ORP), Littoral Combat Ship (LCS), Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.</p> <p>Funding for FY 2016 and beyond has been realigned to new PE 0603680N. At this R2A level, FY 2016 Funding of \$4.800M from Composites Processing and Fabrication in this PE has been re-aligned to PE 0603680N Composites Processing and Fabrication.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Composite Materials and Process Improvement Thrust for DDG-51 Shipbuilding Affordability Initiative. - Continued Composite Materials and Process Improvement Thrust for CVN-78 Shipbuilding Affordability Initiative. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Continued Composite Materials and Process Improvement Thrust for Air Platforms, including the Joint Strike Fighter (JSF).</p> <p>- Continued Composite Materials and Process Improvement Thrust for LCS Shipbuilding Affordability Initiative</p> <p>- Completed Composite Materials and Process Improvement Thrust for VCS Shipbuilding Affordability Initiative. Includes continuation of efforts to develop / optimize composite materials fabrication technology for reduced cost VCS construction.</p> <p>- Initiated Composite Materials and Process Improvement Thrust for VCS/ORP Shipbuilding Affordability Initiative.</p> <p>FY 2016 Plans: Funds have been re-aligned to new PE 0603680N Manufacturing Technology Program. At this R2A level, FY 2016 Funding of \$4.800M from Composites Processing and Fabrication in this PE has been realigned to PE 0603680N Composites Processing and Fabrication.</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>					

Title: CORPORATE INVESTMENTS	4.319	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Corporate Investments activity is focused on accelerating defense industrial enterprise progress toward implementation of world-class industrial practices as well as advanced design and information systems that support weapon system development, production, and sustainment. Key emphasis areas include: 1) Benchmarking and accelerating the implementation of world-class industrial practices throughout the contractor base; 2) Demonstrating and validating advanced business practices and information technologies capable of streamlining management functions in all industrial base tiers; and 3) Leveraging information technologies in pursuit of tighter coupling of all defense industrial enterprise elements. Corporate Investment efforts create improvements to cost and cycle time for weapon system development, production, and repair. Additionally, Corporate Investments include the funding of recently identified near-term high priority affordability efforts for the following affordability platforms: DDG-51, CVN-78 Class Carrier, VIRGINIA Class Submarine (VCS), Littoral Combat Ship (LCS), Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Funding for FY 2016 and beyond has been realigned to new PE 0603680N. At this R2A level, FY 2016 Funding of \$3.581M from Corporate Investments in this PE has been re-aligned to PE 0603680N Manufacturing Enterprise/Other.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continue Near-Term High Priority Affordability Thrust for JSF. - Continued Near-Term High Priority Shipbuilding Affordability Thrust for CVN-78. - Continued Near-Term High Priority Shipbuilding Affordability Thrust for LCS. - Continued efforts to improve the Navy industrial base through above-the-factory-floor enhancements and supply chain processes/technology improvements for Navy weapon system acquisition programs such as the DDG-51, CVN-78, LCS, VCS, and others. - Continued Near-Term, High Priority Shipbuilding Affordability Thrust for DDG-51. - Completed Near-Term High Priority Shipbuilding Affordability Thrust for VCS. - Initiated Near-Term High Priority Shipbuilding Affordability Thrust for VCS/ORP. <p>FY 2016 Plans:</p> <p>Funds have been re-aligned to new PE 0603680N Manufacturing Technology Program. At this R2A level, FY 2016 Funding of \$3.581M from Corporate Investments in this PE has been realigned to PE 0603680N Manufacturing Enterprise/Other.</p> <p>FY 2017 Base Plans:</p> <p>N/A</p> <p>FY 2017 OCO Plans:</p> <p>N/A</p>					
<p>Title: ELECTRONICS PROCESSING AND FABRICATION</p> <p align="right">Articles:</p> <p>Description: Electronics Processing and Fabrication efforts develop and deploy affordable, robust manufacturing processes and capabilities for electronics critical to defense applications over their full life cycle. Efforts create new and improved manufacturing processes on the shop floor, as well as repair and maintain facilities such as depots and logistics centers, with a strong emphasis on process maturation. Emphasis is on affordability for the following shipbuilding platforms: DDG-51, CVN-78 Class Carrier, VIRGINIA Class Submarine (VCS) / OHIO Replacement Program (ORP), and Littoral Combat Ship (LCS), Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.</p>	8.050	0.000	0.000	0.000	0.000
	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

Funding for FY 2016 and beyond has been realigned to new PE 0603680N. At this R2A level, FY 2016 Funding of \$10.543M from Electronic Processing and Fabrication in this PE has been realigned to PE 0603680N Electronics Processing and Fabrication.

FY 2015 Accomplishments:

- Continued Electronics/Electro-Optics Thrust for LCS Shipbuilding Affordability Initiative.
- Continued Electronics/Electro-Optics Thrust for Air Platforms, including the Joint Strike Fighter (JSF). Includes continuation of electronics/ electro-optics efforts to improve affordability for Air Platforms.
- Continued Electronics/Electro-Optics Thrust for DDG-51 Shipbuilding Affordability Initiative. Includes radar/communications efforts to impact DDG-51 affordability.
- Continued Electronics/Electro-Optic Thrust for CVN-78 Shipbuilding Affordability Initiative. Includes continuation of electronics/electrooptics efforts to improve affordability for CVN-78 Class Carrier.
- Completed Electronics/Electro-Optics Thrust for VCS Affordability Initiative. Includes continuation of improved affordable electronics/electro-optics efforts.
- Initiated Electronics/Electro-Optics Thrust for VCS/ORP Affordability Initiative. Includes electronics/electro-optics efforts to improve affordability for VCS/ORP.

FY 2016 Plans:

Funds have been re-aligned to new PE 0603680N Manufacturing Technology Program. At this R2A level, FY 2016 Funding of \$10.543M from Electronic Processing and Fabrication in this PE has been re-aligned to PE 0603680N Electronics Processing and Fabrication.

FY 2017 Base Plans:

N/A

FY 2017 OCO Plans:

N/A

Title: METALS PROCESSING AND FABRICATION

Articles:

Description: The objective of the Metals Processing and Fabrication activity is to develop affordable, robust manufacturing processes and capabilities for metals and special materials critical to defense weapon system applications. Major areas that support this objective include: processing methods, special materials, joining, and inspection and compliance. These efforts directly impact the cost and performance of future aircraft, rotorcraft, land combat vehicles, surface and subsurface naval platforms, space systems, artillery and ammunition, and defense industry manufacturing equipment. Emphasis is on affordability for the following platforms: DDG-51,

FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
10.160	0.000	0.000	0.000	0.000
-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

CVN-78 Class Carrier, VIRGINIA Class Submarine (VCS) / OHIO Replacement Program (ORP), Littoral Combat Ship (LCS), Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.

Funding for FY 2016 and beyond has been realigned to new PE 0603680N. At this R2A level, FY 2016 Funding of \$16.700M from Metals Processing and Fabrication in this PE has been realigned to two activities within PE 0603680N: \$15.500M Metals Processing and Fabrication, \$1.200M Manufacturing Enterprise/Other.

FY 2015 Accomplishments:

- Continued schedule Compression/Production Engineering Thrust for VCS Shipbuilding Affordability Initiative.
- Continued outfitting Thrust for VCS Shipbuilding Affordability Initiative.
- Continued rapid response efforts.
- Continued Metals Materials and Process Improvement Thrust for DDG-51 Shipbuilding Affordability Initiative. Metallic materials and process efforts for DDG-51 include material characterization for optimum processing and fabrication as well as process optimization (welding, bonding, machining, etc.) resulting in reduced cost of fabrication for DDG-51 components.
- Continued Metals Materials and Process Improvement Thrust for CVN-78 Shipbuilding Affordability Initiative. Metallic materials and process efforts for CVN 78 include material characterization for optimum processing and fabrication as well as process optimization (welding, bonding, machining, etc.) resulting in reduced cost of fabrication for CVN 78 components.
- Continued Metals Thrust for Littoral Combat Ship (LCS) Shipbuilding Affordability Initiative.
- Continued Metal Materials and Process Improvements Thrust for Other Ship/NAVSEA Platforms.
- Continued Metals Materials and Process Improvement Thrust for Air Platforms. - Continued Metal Materials and Process Improvements Thrust for Marine Corps Systems.
- Completed Metals Materials and Process Improvement Thrust for VCS Shipbuilding Affordability Initiative.
- Initiated Metals Materials and Process Improvement Thrust for VCS/ORP initiative.

FY 2016 Plans:

Funds have been realigned to new PE 0603680N Manufacturing Technology Program. At this R2A level, FY 2016 Funding of \$16.700M from Metals Processing and Fabrication in this PE has been realigned to two activities within PE 0603680N: \$15.500M Metals Processing and Fabrication, \$1.200M Manufacturing Enterprise/Other.

FY 2017 Base Plans:

FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2017 OCO Plans: N/A					
Title: OTHER (SHIPBUILDING, REPAIR TECH, ENERGETICS, AND TECHNICAL ENGINEERING SUPPORT)	10.022	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
<p>Description: The "Other" activity includes shipbuilding technology, repair technology, energetics, and technical engineering support. Shipbuilding technology primarily addresses the development of manufacturing process improvements for shipyards and is geared towards affordability efforts for the following shipbuilding platforms: DDG-51, CVN-78 Class Carrier, VIRGINIA Class Submarine (VCS) / OHIO Replacement Program (ORP), and Littoral Combat Ship (LCS). Repair technology addresses repair, overhaul, and sustainment functions that emphasize remanufacturing processes and advancing technology. Energetics efforts concentrate on developing energetics solutions to ensure the availability of safe, affordable, and quality energetics products largely in support of Program Executive Office (PEO) Integrated Warfare Systems (IWS).</p> <p>Funding for FY 2016 and beyond has been realigned to new PE 0603680N. At this R2A level, FY 2016 Funding of \$13.955M from Other (Shipbuilding, Repair Tech, Energetics, and technical engineering support) have been realigned to PE 0603680N Manufacturing Enterprise/Other.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Shipbuilding Affordability Thrust for CVN-78. - Continued Shipbuilding Affordability Thrust for LCS. - Continued Shipbuilding Affordability Thrust for DDG-51. - Continued Shipbuilding Thrust for Other Ship/NAVSEA Platforms. - Continued Repair Technology Thrust for repair and sustainment of Navy weapons systems. Includes continuation of Repair Technology projects based on high priority depot needs. - Continued Energetics Thrust for PEO IWS and Other Acquisition Programs. Includes continuation of energetics efforts to support PEO IWS and other acquisition programs. - Continued to provide technical engineering support for the ManTech Program. -Completed Shipbuilding Affordability Thrust for VCS. -Initiated Shipbuilding Affordability Thrust for VCS/ORP. <p>FY 2016 Plans: Funds have been realigned to new PE 0603680N Manufacturing Technology Program.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
At this R2A level, FY 2016 Funding of \$13.955M from Other (Shipbuilding, Repair Tech, Energetics, and technical engineering support) has been realigned to PE 0603680N Manufacturing Enterprise/Other. FY 2017 Base Plans: N/A FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	36.031	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

Efforts are focused on affordability reduction for the following: DDG Family, CVN-78 Class Carrier, Littoral Combat Ship (LCS), the VIRGINIA Class Submarine (VCS) / OHIO Replacement Program (ORP), Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.

E. Performance Metrics

The ManTech program's overall goal is to transition production technology to reduce the cost of Navy weapons systems. Metrics are currently collected on the cost savings per hull or per aircraft for each of the five primary affordability platforms: DDG-51, CVN-78 Class Carrier, VIRGINIA Class Submarine/OHIO Replacement Program (VCS/ORP), Littoral Combat Ship (LCS), and Joint Strike Fighter (JSF), and, starting in FY16, CH-53-K.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mfg Development (B2P)	C/CPFF	American Competitiveness Institute (ACI) : Philadelphia, PA (B2P)	6.300	0.000		0.000		0.000		-		0.000	0.000	6.300	-
Mfg Development (CMTTC)	C/CPAF	SCRA : Anderson, SC	39.671	3.525	Oct 2014	0.000		0.000		-		0.000	0.000	43.196	-
Award Fee (CMTTC)	C/CPAF	SCRA : Anderson, SC	1.932	0.225	Oct 2014	0.000		0.000		-		0.000	0.000	2.157	-
Mfg Development (CNST)1	C/CPFF	Advanced Technology Institute (ATI) : Charleston, SC	4.697	0.000		0.000		0.000		-		0.000	0.000	4.697	-
Mfg Development (CNST)2	C/CPAF	Advanced Technology Institute (ATI) : Charleston, SC	26.818	6.322	Oct 2014	0.000		0.000		-		0.000	0.000	33.140	-
Award Fee (CNST)	C/CPAF	Advanced Technology Institute (ATI) : Charleston, SC	1.874	0.378	Oct 2014	0.000		0.000		-		0.000	0.000	2.252	-
Mfg Development (EMPF)	C/CPAF	American Competitiveness Institute (ACI) : Philadelphia, PA	40.728	5.264	Oct 2014	0.000		0.000		-		0.000	0.000	45.992	-
Award Fee (EMPF)	C/CPAF	American Competitiveness Institute (ACI) : Philadelphia, PA	2.632	0.336	Oct 2014	0.000		0.000		-		0.000	0.000	2.968	-
Mfg Development (EMTC)	WR	Naval Surface Warfare Center - Indian Head : Indian Head, MD	11.705	1.300	Oct 2014	0.000		0.000		-		0.000	0.000	13.005	-
Mfg Development (EOC)	C/CPAF	Penn State University : State College, PA (EOC)	20.826	2.303	Oct 2014	0.000		0.000		-		0.000	0.000	23.129	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Award Fee (EOC)	C/CPAF	Penn State University : State College, PA (EOC)	1.072	0.147	Oct 2014	0.000		0.000		-		0.000	0.000	1.219	-
Mfg Development (iMAST)	C/CPFF	Penn State University : State College, PA (iMAST)	21.879	2.700	Oct 2014	0.000		0.000		-		0.000	0.000	24.579	-
Mfg Development (NJC)	C/CPAF	Edison Welding Institute : Columbus, OH	11.479	0.000		0.000		0.000		-		0.000	0.000	11.479	-
Award Fee (NJC)	C/CPAF	Edison Welding Institute : Columbus, OH	0.793	0.000		0.000		0.000		-		0.000	0.000	0.793	-
Mfg Development (NMC)	C/CPAF	Concurrent Technologies Corp. : Johnstown, PA	66.962	7.663	Oct 2014	0.000		0.000		-		0.000	0.000	74.625	-
Award Fee (NMC)	C/CPAF	Concurrent Technologies Corp. : Johnstown, PA	3.810	0.480	Oct 2014	0.000		0.000		-		0.000	0.000	4.290	-
Mfg Development	WR	Naval Air Systems Command (NAVAIR) : Patuxent River, MD	2.128	0.090	Oct 2014	0.000		0.000		-		0.000	0.000	2.218	-
Mfg Development	WR	Naval Research Laboratory (NRL) : Washington, DC	1.280	0.080	Oct 2014	0.000		0.000		-		0.000	0.000	1.360	-
Mfg Development	WR	Naval Surface Warfare Center - Carderock Division : Carderock, MD	8.516	0.858	Oct 2014	0.000		0.000		-		0.000	0.000	9.374	-
Mfg Development	WR	Naval Undersea Warfare Center - Newport : Newport, RI	0.380	0.000		0.000		0.000		-		0.000	0.000	0.380	-
Mfg Development	WR	SPAWAR : San Diego, CA	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mfg Development	WR	Naval Surface Warfare Center Dahlgren : Dahlgren, VA	0.055	0.025	Oct 2014	0.000		0.000		-		0.000	0.000	0.080	-
Mfg Development	WR	Puget Sound Naval Shipyard : Bremerton, WA	0.006	0.000		0.000		0.000		-		0.000	0.000	0.006	-
Subtotal			275.553	31.696		0.000		0.000		-		0.000	0.000	307.249	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Support (GTEC)	C/CPFF	DRC : Andover, MA	11.057	1.700	Oct 2014	0.000		0.000		-		0.000	0.000	12.757	-
Contractor Support (GMST)	C/CPFF	DRC : Andover, MA	0.238	0.025	Oct 2014	0.000		0.000		-		0.000	0.000	0.263	-
ManTech Registrations (GMPC)	Various	Various : Various	0.049	0.005	Oct 2014	0.000		0.000		-		0.000	0.000	0.054	-
ManTech Travel (GMITT)	Various	Various : Various	0.460	0.045	Oct 2014	0.000		0.000		-		0.000	0.000	0.505	-
Contractor Support (GMST)	C/CPFF	Various : Various	0.866	0.015	Oct 2014	0.000		0.000		-		0.000	0.000	0.881	-
Miscellaneous (ONR Support Bills)	C/CPFF	Various : Various	7.221	1.335	Oct 2014	0.000		0.000		-		0.000	0.000	8.556	-
Miscellaneous (Stat Reserve)	Various	Various : Various	10.109	1.000	Oct 2014	0.000		0.000		-		0.000	0.000	11.109	-
Detailee staff	WR	Army Research Lab : Aberdeen, MD	0.150	0.150	Oct 2014	0.000		0.000		-		0.000	0.000	0.300	-
JDMTP Support	WR	Air Force Research Lab : Dayton, OH	0.060	0.060	Oct 2014	0.000		0.000		-		0.000	0.000	0.120	-
Subtotal			30.210	4.335		0.000		0.000		-		0.000	0.000	34.545	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
Proj 1050																												
Composites Processing and Fabrication	██████████																											
-- Annual Investment Guidance (CP&F)	██████████																											
-- Project Identification (CP&F)	██																											
-- Project Evaluation (CP&F)	██████																											
-- Prog Office Commitment (CP&F)	██████																											
-- FY Plan Determined (CP&F)	██████████																											
-- Project Award (CP&F)	██																											
-- Ongoing Projects (CP&F)	██████████																											
Corporate Investments	██████████																											
-- Annual Investment Guidance (CI)	██████████																											
-- Project Identification (CI)	██																											
-- Project Evaluation (CI)	██████																											
-- Prog Office Commitment (CI)	██████																											
-- FY Plan Determined (CI)	██████████																											
-- Project Award (CI)	██																											
-- Ongoing Projects (CI)	██████████																											
Electronics Processing and Fabrication	██████████																											
-- Annual Investment Guidance (EP&F)	██████████																											
-- Project Identification (EP&F)	██																											
-- Project Evaluation (EP&F)	██████																											
-- Prog Office Commitment (EP&F)	██████																											
-- FY Plan Determined (EP&F)	██████████																											
-- Project Award (EP&F)	██																											
-- Ongoing Projects (EP&F)	██████████																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 1050				
Composites Processing and Fabrication	1	2015	4	2015
-- Annual Investment Guidance (CP&F)	1	2015	4	2015
-- Project Identification (CP&F)	1	2015	1	2015
-- Project Evaluation (CP&F)	1	2015	2	2015
-- Prog Office Commitment (CP&F)	1	2015	2	2015
-- FY Plan Determined (CP&F)	1	2015	3	2015
-- Project Award (CP&F)	1	2015	1	2015
-- Ongoing Projects (CP&F)	1	2015	4	2015
Corporate Investments	1	2015	4	2015
-- Annual Investment Guidance (CI)	1	2015	4	2015
-- Project Identification (CI)	1	2015	1	2015
-- Project Evaluation (CI)	1	2015	2	2015
-- Prog Office Commitment (CI)	1	2015	2	2015
-- FY Plan Determined (CI)	1	2015	3	2015
-- Project Award (CI)	1	2015	1	2015
-- Ongoing Projects (CI)	1	2015	4	2015
Electronics Processing and Fabrication	1	2015	4	2015
-- Annual Investment Guidance (EP&F)	1	2015	4	2015
-- Project Identification (EP&F)	1	2015	1	2015
-- Project Evaluation (EP&F)	1	2015	2	2015
-- Prog Office Commitment (EP&F)	1	2015	2	2015
-- FY Plan Determined (EP&F)	1	2015	3	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708011N / <i>Industrial Preparedness</i>	Project (Number/Name) 1050 / <i>Manufacturing Tech</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
-- Project Award (EP&F)	1	2015	1	2015
-- Ongoing Projects (EP&F)	1	2015	4	2015
Metals Processing and Fabrication	1	2015	4	2015
-- Annual Investment Guidance (MP&F)	1	2015	4	2015
-- Project Identification (MP&F)	1	2015	1	2015
-- Project Evaluation (MP&F)	1	2015	2	2015
-- Prog Office Commitment (MP&F)	1	2015	2	2015
-- FY Plan Determined (MP&F)	1	2015	3	2015
-- Project Award (MP&F)	1	2015	1	2015
-- Ongoing Projects (MP&F)	1	2015	4	2015
Other	1	2015	4	2015
-- Annual Investment Guidance (Other)	1	2015	4	2015
-- Project Identification (Other)	1	2015	1	2015
-- Project Evaluation (Other)	1	2015	2	2015
-- Prog Office Commitment (Other)	1	2015	2	2015
-- FY Plan Determined (Other)	1	2015	3	2015
-- Project Award (Other)	1	2015	1	2015
-- Ongoing Projects (Other)	1	2015	4	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>					R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	13.162	4.187	4.321	3.204	-	3.204	4.861	4.808	4.191	4.638	Continuing	Continuing
2466: <i>NSRP ASE</i>	13.162	4.187	4.321	3.204	-	3.204	4.861	4.808	4.191	4.638	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Shipbuilding Research Program (NSRP) is an industry and enterprise wide research collaboration that seeks to reduce the Navy's shipbuilding and repair cost. The resulting technologies implemented in NSRP-ASE member shipyards, benefit both the shipyard and the US Navy.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.347	4.321	4.361	-	4.361
Current President's Budget	4.187	4.321	3.204	-	3.204
Total Adjustments	-0.160	0.000	-1.157	-	-1.157
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.160	0.000			
• Program Adjustments	0.000	0.000	-1.067	-	-1.067
• Rate/Misc Adjustments	0.000	0.000	-0.090	-	-0.090

Change Summary Explanation

The FY 2015 funding request includes a reduction of 0.160 million to account for SBIR transfers.

The FY 2017 funding request includes reductions of \$0.929 million to account for prior year available balances, \$0.138 million for the Department of the Navy to comply with the Bipartisan Budget Act of 2015, and \$0.090 million for other miscellaneous adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>				Project (Number/Name) 2466 / <i>NSRP ASE</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2466: <i>NSRP ASE</i>	13.162	4.187	4.321	3.204	-	3.204	4.861	4.808	4.191	4.638	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

NSRP ASE is a collaboration of U.S. shipyards working with the Navy customer to reduce the cost of building and repairing naval ships and improving shipbuilding industry productivity through advanced technology and processes. NSRP ASE is an innovative and proven approach to public/private cooperation to manage cost-shared R&D based on a national consensus Strategic Investment Plan. The Plan targets potential industry-wide technology and process solutions which are vetted by industry experts and builds upon the progress made over the previous years. The collaboration's organizational structure promotes teaming of industry, government and academia to achieve the continuous product and process improvements necessary for improved Navy ship affordability. Solutions include both leverage of best commercial practices and creation of industry-wide initiatives with aggressive technology transfer to, and buy-in by, multiple U.S. shipyards. Navy PEOs (Ships, Subs and Carriers) and NAVSEA are directly involved in NSRP. The Plan calls for matching government and industry investments over several years.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Technology Development Projects	4.187	4.321	3.204	0.000	3.204
Articles:	-	-	-	-	-
Description: The NSRP is an ongoing Research and Development program. This program awards small research projects and large research projects to (1) Improve Quality; (2) Reduce Total Ownership Costs; and, (3) Increase Energy Efficiency. These research projects have been known to produce technological advances in shipbuilding that once implemented have resulted in savings for the Navy.					
FY 2015 Accomplishments: (1) Completed technology development projects in the four major initiative areas (Ship Design and Material Technologies, Ship Production Technologies, Business Process and Information Systems, and Infrastructure and Support (Regulatory Compliance, Technology Transfer and Workforce Development) that were competitively selected by industry subject matter experts and Navy stakeholders during Government Fiscal Year (GFY14). The projects targeted the following priorities in Naval shipbuilding and repair: (1)Improving Quality; (2) Reduction of Total Ownership Costs; and, (3) Increasing Energy Efficiency. It is					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>	Project (Number/Name) 2466 / <i>NSRP ASE</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>anticipated that projects currently in process will continue to be focused in the following areas:</p> <ul style="list-style-type: none"> - Promotion of Modular Construction - Reduction of Re-work - Improving Production Engineering - Improving Specifications and Standards - Improving Manufacturing Processes - Improving Production Planning - Data Exchange - Improving Safety & Health / Reducing Environmental Impacts - Education and Training - Total Ownership Cost <p>(2) Continue technology transfer among the Navy, shipbuilding industry, academia, equipment and material suppliers and the R&D community.</p> <p>FY 2016 Plans:</p> <p>(1) Complete technology development projects in the four major initiative areas (Ship Design and Material Technologies, Ship Production Technologies, Business Process and Information Systems, and Infrastructure and Support (Regulatory Compliance, Technology Transfer and Workforce Development)) that will be competitively selected by industry subject matter experts and Navy stakeholders during GFY15, targeting the following priorities in Naval shipbuilding and repair:</p> <p>(1) Improving Quality; (2) Reduction of Total Ownership Costs; and, (3) Increasing Energy Efficiency. It is anticipated that projects selected will continue to be focused in the following areas:</p> <ul style="list-style-type: none"> - Promotion of Modular Construction - Reduction of Re-work - Improving Production Engineering - Improving Specifications and Standards - Improving Manufacturing Processes - Improving Production Planning - Data Exchange - Improving Safety & Health / Reducing Environmental Impacts - Education and Training - Total Ownership Cost 					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy	Date: February 2016
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>	Project (Number/Name) 2466 / <i>NSRP ASE</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>(2) Continue technology transfer among the Navy, shipbuilding industry, academia, equipment and material suppliers and the R&D community</p> <p>FY 2017 Base Plans: (1) Complete technology development projects in the four major initiative areas (Ship Design and Material Technologies, Ship Production Technologies, Business Process and Information Systems, and Infrastructure and Support (Regulatory Compliance, Technology Transfer and Workforce Development)) that will be competitively selected by industry subject matter experts and Navy stakeholders during GFY16, targeting the following priorities in Naval shipbuilding and repair: (1) Improving Quality; (2) Reduction of Total Ownership Costs; and, (3) Increasing Energy Efficiency. It is anticipated that projects selected will continue to be focused in the following areas: - Promotion of Modular Construction - Reduction of Re-work - Improving Production Engineering - Improving Specifications and Standards - Improving Manufacturing Processes - Improving Production Planning - Data Exchange - Improving Safety & Health / Reducing Environmental Impacts - Education and Training - Total Ownership Cost</p> <p>(2) Continue technology transfer among the Navy, shipbuilding industry, academia, equipment and material suppliers and the R&D community</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	4.187	4.321	3.204	0.000	3.204

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>	Project (Number/Name) 2466 / <i>NSRP ASE</i>
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D. Acquisition Strategy

R&D projects have been solicited and awarded by an industry collaboration represented by the Executive Control Board (ECB) of the National Shipbuilding Research Program (NSRP). The Navy has entered into an agreement with the industry collaboration using "other transaction" authority pursuant to 10 U.S.C. 2371.

E. Performance Metrics

Quarterly reports and reviews

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>	Project (Number/Name) 2466 / <i>NSRP ASE</i>
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Proj 2466	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Ship Collaborative Framework Technologies																												
Empty grid for data entry																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0708730N / <i>Maritime Tech (MARITECH)</i>	Project (Number/Name) 2466 / <i>NSRP ASE</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 2466</i>				
Ship Collaborative Framework Technologies	1	2015	4	2021