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**Department of Defense  
Fiscal Year (FY) 2012 Budget Estimates**

February 2011



**Navy**

*Justification Book Volume 2*

***Research, Development, Test & Evaluation, Navy***

**Budget Activity 4**

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Navy • President's Budget FY 2012 • RDT&E Program

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Department of the Navy  
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 Total Obligational Authority  
 (Dollars in Thousands)

24 Jan 2011

Summary Recap of Budget Activities	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj	FY 2011 OCO Request with CR Adj	FY 2011 Total Request with CR Adj	FY 2011 Annual CR Base	FY 2011 Annual CR OCO	FY 2011 Annual CR Total
Advanced Component Development & Prototypes	4,280,053	3,914,371	1,000	3,915,371	4,404,400	1,650	4,406,050
Total Research, Development, Test & Eval, Navy	4,280,053	3,914,371	1,000	3,915,371	4,404,400	1,650	4,406,050
Summary Recap of FYDP Programs							
Intelligence and Communications		7,077		7,077	7,963		7,963
Research and Development	4,280,053	3,907,294	1,000	3,908,294	4,396,437	1,650	4,398,087
Total Research, Development, Test & Eval, Navy	4,280,053	3,914,371	1,000	3,915,371	4,404,400	1,650	4,406,050

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Summary Recap of Budget Activities -----	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Advanced Component Development & Prototypes	4,481,053	1,500	4,482,553
Total Research, Development, Test & Eval, Navy	4,481,053	1,500	4,482,553
 Summary Recap of FYDP Programs -----			
Intelligence and Communications	1,703		1,703
Research and Development	4,479,350	1,500	4,480,850
Total Research, Development, Test & Eval, Navy	4,481,053	1,500	4,482,553

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

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj	FY 2011 OCO Request with CR Adj	FY 2011 Total Request with CR Adj	FY 2011 Annual CR Base	FY 2011 Annual CR OCO	FY 2011 Annual CR Total	S e c
26	0603207N	Air/Ocean Tactical Applications	04	112,516	123,331		123,331	138,770		138,770	U
27	0603216N	Aviation Survivability	04	29,575	9,480		9,480	10,667		10,667	U
28	0603237N	Deployable Joint Command and Control	04	8,644	4,275		4,275	4,810		4,810	U
29	0603251N	Aircraft Systems	04								U
30	0603254N	ASW Systems Development	04	25,144	8,249		8,249	9,282		9,282	U
31	0603261N	Tactical Airborne Reconnaissance	04	9,605	6,452		6,452	7,260		7,260	U
32	0603382N	Advanced Combat Systems Technology	04	3,605	1,658		1,658	1,866		1,866	U
33	0603502N	Surface and Shallow Water Mine Countermeasures	04	93,750	81,347		81,347	91,531		91,531	U
34	0603506N	Surface Ship Torpedo Defense	04	57,922	57,796		57,796	65,031		65,031	U
35	0603512N	Carrier Systems Development	04	171,441	93,830		93,830	105,576		105,576	U
36	0603513N	Shipboard System Component Development	04	32,008	51		51	57		57	U
37	0603525N	PILOT FISH	04	85,100	81,784		81,784	92,022		92,022	U
38	0603527N	RETRACT LARCH	04	121,715	142,858		142,858	160,742		160,742	U
39	0603536N	RETRACT JUNIPER	04	112,864	134,497		134,497	151,334		151,334	U
40	0603542N	Radiological Control	04	1,325	1,358		1,358	1,528		1,528	U
41	0603553N	Surface ASW	04	21,420	21,673		21,673	24,386		24,386	U
42	0603561N	Advanced Submarine System Development	04	523,132	608,566		608,566	684,750		684,750	U
43	0603562N	Submarine Tactical Warfare Systems	04	10,869	5,590		5,590	6,290		6,290	U
44	0603563N	Ship Concept Advanced Design	04	23,166	17,883		17,883	20,122		20,122	U

R-1P: FY 2012 President's Budget (With FY 2011 CR Adjustments), as of January 24, 2011 at 11:19:31

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 Total Obligational Authority  
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Appropriation: 1319N Research, Development, Test &amp; Eval, Navy

Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Se
26	0603207N	Air/Ocean Tactical Applications	04	94,972		94,972	U
27	0603216N	Aviation Survivability	04	10,893		10,893	U
28	0603237N	Deployable Joint Command and Control	04	3,702		3,702	U
29	0603251N	Aircraft Systems	04	10,497		10,497	U
30	0603254N	ASW Systems Development	04	7,915		7,915	U
31	0603261N	Tactical Airborne Reconnaissance	04	5,978		5,978	U
32	0603382N	Advanced Combat Systems Technology	04	1,418		1,418	U
33	0603502N	Surface and Shallow Water Mine Countermeasures	04	142,657		142,657	U
34	0603506N	Surface Ship Torpedo Defense	04	118,764		118,764	U
35	0603512N	Carrier Systems Development	04	54,072		54,072	U
36	0603513N	Shipboard System Component Development	04				U
37	0603525N	PILOT FISH	04	96,012		96,012	U
38	0603527N	RETRACT LARCH	04	73,421		73,421	U
39	0603536N	RETRACT JUNIPER	04	130,267		130,267	U
40	0603542N	Radiological Control	04	1,338		1,338	U
41	0603553N	Surface ASW	04	29,797		29,797	U
42	0603561N	Advanced Submarine System Development	04	856,326		856,326	U
43	0603562N	Submarine Tactical Warfare Systems	04	9,253		9,253	U
44	0603563N	Ship Concept Advanced Design	04	14,308		14,308	U

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

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj	FY 2011 OCO Request with CR Adj	FY 2011 Total Request with CR Adj	FY 2011 Annual CR Base	FY 2011 Annual CR OCO	FY 2011 Annual CR Total	Sec
45	0603564N	Ship Preliminary Design & Feasibility Studies	04	30,928	1,796		1,796	2,021		2,021	U
46	0603570N	Advanced Nuclear Power Systems	04	258,803	366,509		366,509	412,391		412,391	U
47	0603573N	Advanced Surface Machinery Systems	04	17,319	5,459		5,459	6,142		6,142	U
48	0603576N	CHALK EAGLE	04	392,224	447,804		447,804	503,863		503,863	U
49	0603581N	Littoral Combat Ship (LCS)	04	421,994	226,288		226,288	254,616		254,616	U
50	0603582N	Combat System Integration	04	20,822	24,344		24,344	27,392		27,392	U
51	0603609N	Conventional Munitions	04	4,087	5,388		5,388	6,063		6,063	U
52	0603611M	Marine Corps Assault Vehicles	04	302,099	242,765		242,765	273,156		273,156	U
53	0603635M	Marine Corps Ground Combat/Support System	04	72,411	40,505		40,505	45,576		45,576	U
54	0603654N	Joint Service Explosive Ordnance Development	04	20,253	25,873	1,000	26,873	29,112	1,650	30,762	U
55	0603658N	Cooperative Engagement	04	58,278	52,282		52,282	58,827		58,827	U
56	0603713N	Ocean Engineering Technology Development	04	16,652	13,560		13,560	15,258		15,258	U
57	0603721N	Environmental Protection	04	20,707	20,207		20,207	22,737		22,737	U
58	0603724N	Navy Energy Program	04	18,643	30,403		30,403	34,209		34,209	U
59	0603725N	Facilities Improvement	04	9,715	3,746		3,746	4,215		4,215	U
60	0603734N	CHALK CORAL	04	71,855	71,920		71,920	80,923		80,923	U
61	0603739N	Navy Logistic Productivity	04	13,400	4,139		4,139	4,657		4,657	U
62	0603746N	RETRACT MAPLE	04	213,100	219,463		219,463	246,937		246,937	U
63	0603748N	LINK PLUMERIA	04	62,009	58,030		58,030	65,295		65,295	U

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Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Se
45	0603564N	Ship Preliminary Design & Feasibility Studies	04	22,213		22,213	U
46	0603570N	Advanced Nuclear Power Systems	04	463,683		463,683	U
47	0603573N	Advanced Surface Machinery Systems	04	18,249		18,249	U
48	0603576N	CHALK EAGLE	04	584,159		584,159	U
49	0603581N	Littoral Combat Ship (LCS)	04	286,784		286,784	U
50	0603582N	Combat System Integration	04	34,157		34,157	U
51	0603609N	Conventional Munitions	04	4,753		4,753	U
52	0603611M	Marine Corps Assault Vehicles	04	12,000		12,000	U
53	0603635M	Marine Corps Ground Combat/Support System	04	79,858		79,858	U
54	0603654N	Joint Service Explosive Ordnance Development	04	33,654	1,500	35,154	U
55	0603658N	Cooperative Engagement	04	54,783		54,783	U
56	0603713N	Ocean Engineering Technology Development	04	9,996		9,996	U
57	0603721N	Environmental Protection	04	21,714		21,714	U
58	0603724N	Navy Energy Program	04	70,538		70,538	U
59	0603725N	Facilities Improvement	04	3,754		3,754	U
60	0603734N	CHALK CORAL	04	79,415		79,415	U
61	0603739N	Navy Logistic Productivity	04	4,137		4,137	U
62	0603746N	RETRACT MAPLE	04	276,383		276,383	U
63	0603748N	LINK PLUMERIA	04	52,721		52,721	U

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

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj	FY 2011 OCO Request with CR Adj	FY 2011 Total Request with CR Adj	FY 2011 Annual CR Base	FY 2011 Annual CR OCO	FY 2011 Annual CR Total	Se c
64	0603751N	RETRACT ELM	04	148,795	183,187		183,187	206,120		206,120	U
65	0603755N	Ship Self Defense	04	6,644	4,385		4,385	4,934		4,934	U
66	0603764N	LINK EVERGREEN	04	84,160	41,433		41,433	46,620		46,620	U
67	0603787N	Special Processes	04	82,987	36,457		36,457	41,021		41,021	U
68	0603790N	NATO Research and Development	04	9,804	9,196		9,196	10,347		10,347	U
69	0603795N	Land Attack Technology	04	9,733	905		905	1,018		1,018	U
70	0603851M	Nonlethal Weapons	04	50,945	43,272		43,272	48,689		48,689	U
71	0603860N	Joint Precision Approach and Landing Systems	04	143,546	159,151		159,151	179,075		179,075	U
72	0603879N	Single Integrated Air Picture (SIAP) System Engineer (SE)	04	46,087							U
73	0603889N	Counterdrug RDT&E Projects	04	14,522							U
74	0603925N	Directed Energy and Electric Weapon Systems	04	18,989							U
75	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	49,067	51,693		51,693	58,164		58,164	U
76	0604279N	ASE Self-Protection Optimization	04	4,000							U
77	0604653N	Joint Counter Radio Controlled IED Electronic Warfare (JCREW)	04	63,485	56,542		56,542	63,620		63,620	U
78	0604659N	Precision Strike Weapons Development Program	04	39,478	25,121		25,121	28,266		28,266	U
79	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	38,711	34,793		34,793	39,149		39,149	U
80	0303354N	ASW Systems Development - MIP	04		2,161		2,161	2,432		2,432	U

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Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Se c
64	0603751N	RETRACT ELM	04	160,964		160,964	U
65	0603755N	Ship Self Defense	04				U
66	0603764N	LINK EVERGREEN	04	144,985		144,985	U
67	0603787N	Special Processes	04	43,704		43,704	U
68	0603790N	NATO Research and Development	04	9,140		9,140	U
69	0603795N	Land Attack Technology	04	421		421	U
70	0603851M	Nonlethal Weapons	04	40,992		40,992	U
71	0603860N	Joint Precision Approach and Landing Systems	04	121,455		121,455	U
72	0603879N	Single Integrated Air Picture (SIAP) System Engineer (SE)	04				U
73	0603889N	Counterdrug RDT&E Projects	04				U
74	0603925N	Directed Energy and Electric Weapon Systems	04				U
75	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	64,107		64,107	U
76	0604279N	ASE Self-Protection Optimization	04	711		711	U
77	0604653N	Joint Counter Radio Controlled IED Electronic Warfare (JCREW)	04	62,044		62,044	U
78	0604659N	Precision Strike Weapons Development Program	04	22,665		22,665	U
79	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	33,621		33,621	U
80	0303354N	ASW Systems Development - MIP	04	1,078		1,078	U

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81	0303562N	Submarine Tactical Warfare Systems - MIP	04		4,253		4,253	4,785		4,785	U
82	0304270N	Electronic Warfare Development - MIP	04		663		663	746		746	U
		Advanced Component Development & Prototypes		4,280,053	3,914,371	1,000	3,915,371	4,404,400	1,650	4,406,050	
Total Research, Development, Test & Eval, Navy				4,280,053	3,914,371	1,000	3,915,371	4,404,400	1,650	4,406,050	

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Line No	Element Number	Program Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Se
81	0303562N	Submarine Tactical Warfare Systems - MIP	04				U
82	0304270N	Electronic Warfare Development - MIP	04	625		625	U
		Advanced Component Development & Prototypes		4,481,053	1,500	4,482,553	
Total Research, Development, Test & Eval, Navy				4,481,053	1,500	4,482,553	

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32	04	0603382N	Advanced Combat Systems Tech.....	
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34	04	0603506N	Surface Ship Torpedo Defense.....	
35	04	0603512N	Carrier Systems Development.....	
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***Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)  
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49	04	0603581N	Littoral Combat Ship (LCS).....	
50	04	0603582N	Combat System Integration.....	
51	04	0603609N	Conventional Munitions.....	
52	04	0603611M	Marine Corps Assault Vehicles.....	
53	04	0603635M	Marine Corps Grnd Cmbt/Supt Sys.....	
54	04	0603654N	JT Service Explosive Ordn Dev.....	
55	04	0603658N	Cooperative Engagement.....	
56	04	0603713N	Ocean Engineering Tech Dev.....	
57	04	0603721N	Environmental Protection.....	
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78	04	0604659N	(U)Precision Strike Weapons Development Program.....	
79	04	0604707N	SEW Architecture/Eng Support.....	
80	04	0303354N	ASW Systems Development - MIP.....	
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Marine Corps Grnd Cmbt/Supt Sys	0603635M	53	04.....	
NATO Research and Deve	0603790N	68	04.....	
Navy Energy Program	0603724N	58	04.....	
Navy Logistic Productivity	0603739N	61	04.....	
Ocean Engineering Tech Dev	0603713N	56	04.....	
Radiological Control	0603542N	40	04.....	
SEW Architecture/Eng Support	0604707N	79	04.....	
Ship Concept Advanced Design	0603563N	44	04.....	
Ship Prel Design & Feasibility Studies	0603564N	45	04.....	

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Navy • President's Budget FY 2012 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line Item</b>	<b>Budget Activity</b>	<b>Page</b>
Ship Self Defense - DEM/VAL	0603755N	65	04.....	
Shipboard Sys Component Dev	0603513N	36	04.....	
Single Int Air Picture (SIAP) Sys Eng	0603879N	72	04.....	
Submarine Tactical Warfare Sys	0603562N	43	04.....	
Submarine Tactical Warfare Systems - MIP	0303562N	81	04.....	
Surface & Shallow Water MCM	0603502N	33	04.....	
Surface ASW	0603553N	41	04.....	
Surface Ship Torpedo Defense	0603506N	34	04.....	
Tact Air Dir Infrared CM (TADIRCM)	0604272N	75	04.....	
Tactical Airborne Reconnaissance	0603261N	31	04.....	

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	112.516	123.331	94.972	-	94.972	61.382	24.740	24.999	24.871	Continuing	Continuing
2341: <i>METOC Data Acquisition</i>	20.859	15.288	6.083	-	6.083	6.802	6.807	6.981	6.940	Continuing	Continuing
2342: <i>METOC Data Assimilation and Mod</i>	18.685	15.311	10.636	-	10.636	11.321	10.026	10.022	9.995	Continuing	Continuing
2343: <i>Tactical METOC Applications</i>	15.624	13.736	9.562	-	9.562	8.271	-	-	-	0.000	47.193
2344: <i>Precise Timing and Astronomy</i>	2.216	2.118	1.025	-	1.025	1.043	1.014	1.023	0.982	Continuing	Continuing
3207: <i>Fleet Synthetic Training</i>	0.973	3.437	0.968	-	0.968	1.041	1.065	1.086	1.105	Continuing	Continuing
3229: <i>JMAPS</i>	52.765	73.441	66.698	-	66.698	32.904	5.828	5.887	5.849	Continuing	Continuing
9999: <i>Congressional Adds</i>	1.394	-	-	-	-	-	-	-	-	0.000	1.394

**A. Mission Description and Budget Item Justification**

The Air Ocean Tactical Applications (AOTA) Program Element is fully aligned with the Navy's maritime strategy to enhance the future mission capabilities of the Navy-Marine Corps Team. New state-of-the art government and commercial technologies are identified, transitioned, demonstrated and then integrated into Combat Systems and programs of record and Tactical Decision Aids that determine in real-time and near-real-time the operational effects of the physical environment on the performance of combat forces and their new and emerging platforms, sensors, systems and munitions. The AOTA program element focuses on sensing and characterizing and predicting the littoral and deep-strike battlespace in the context of regional conflicts and crisis response scenarios. Projects in this program element transition state-of-the art sensing, assimilation, modeling and decision aid technologies from Government and commercial sources. Unique project development efforts include atmospheric and oceanographic data assimilation techniques, forecast models, data base management systems and associated software for use in mainframe, desktop and laptop computers. Model data, products and services can be used by forward-deployed personnel or in a reach-back mode to optimize sensor placement and force allocation decisions. Global Geospatial Information and Services efforts within this program address the bathymetric needs of the Navy. Also developed are algorithms to process new satellite sensor data for integration into Navy and Marine Corps decision support systems and for display as part of the common operational and tactical pictures. In addition, the projects provide for demonstration and validation of specialized atmospheric and oceanographic instrumentation and measurement techniques, new sensors, communications and interfaces. Included are new capabilities to assess, predict and enhance the performance of current and emerging undersea warfare and mine warfare weapons systems. AOTA capabilities are designed to support the latest versions of the Global Command and Control System and specific unit-level combat systems. Finally, this program develops technological upgrades for the U.S. Naval Observatory's Master Clock system to meet requirements with the demands of Department of Defense communications, cryptographic, intelligence, geolocation, and targeting systems; develops near-real-time earth orientation predictions; develops very precise determination of positions of both faint and bright stars; and supports satellite tracking and space debris studies.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>	PE 0603207N: <i>Air/Ocean Tactical Applications</i>
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	

Major emphasis areas include the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) and the J-MAPS programs of record, and the Meteorological and Oceanographic (METOC) Future Mission Capabilities, the METOC Space-Based Sensing Capabilities, the Precise Timing and Astrometry, the Fleet Synthetic Training and the Tactical Oceanographic Capabilities / Under Sea Warfare projects.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	118.495	123.331	113.306	-	113.306
Current President's Budget	112.516	123.331	94.972	-	94.972
Total Adjustments	-5.979	-	-18.334	-	-18.334
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-2.514	-			
• SBIR/STTR Transfer	-2.914	-			
• Program Adjustments	-	-	-17.977	-	-17.977
• Section 219 Reprogramming	-0.542	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.357	-	-0.357
• Congressional General Reductions Adjustments	-0.009	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Semi-Submersible UUV*

	<b>FY 2010</b>	<b>FY 2011</b>
Congressional Add Subtotals for Project: 9999	1.394	-
Congressional Add Totals for all Projects	1.394	-

**Change Summary Explanation**

Technical: Beginning in FY12 the Navy has canceled all Ocean Bottom Characterization Initiative (OBCI) activities previously planned as part of the Tactical Oceanographic Capabilities / Under Sea Warfare (TOC/USW) project.

Beginning in FY14 the Navy has canceled all Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program development efforts.



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
PE 0603207N: *Air/Ocean Tactical Applications*

Schedule: The schedule for the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program of record has been updated, post contract award, to reflect that the Navy has canceled all of the programs development efforts after FY13.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2341: <i>METOC Data Acquisition</i>	20.859	15.288	6.083	-	6.083	6.802	6.807	6.981	6.940	Continuing	Continuing
Quantity of RDT&E Articles	4	2	0	0	0	0	0	0	0		

**Note**

Littoral Battlespace Sensing, Unmanned Undersea Vehicles (LBS-UUV) FY 2012 efforts continued in PE 0604218N (Air/Ocean Equipment Engineering) project 2345 (Fleet METOC Equipment).

Quantity of RDT&E Articles for FY 2010 represent LBS-G Engineering Design Models (EDMs) and for FY 2011 represent LBS-AUV EDMs.

**A. Mission Description and Budget Item Justification**

The major thrust of the Meteorology and Oceanography (METOC) Data Acquisition Project is to provide future mission capabilities to warfighters that will allow them to detect and monitor the conditions of the physical environment throughout the entire battlespace. New sensor technologies (including unmanned vehicles, tactical sensor exploitation, in-situ sensors) identified as the most promising candidates are transitioned from the government's and commercial industry's technology base. These new sensor technologies are demonstrated, validated and integrated into operational programs for warfighters. These new sensor capabilities provide timely and accurate METOC data and products to operational and tactical commanders. METOC data requirements have likewise evolved as the emphasis on naval warfare has evolved from blue water operations to the littoral and deep strike battlespace. The littoral and deep strike regions are dynamic and complex, characterized by strong and variable oceanographic and atmospheric conditions. The need to accurately characterize these conditions is more crucial than ever in planning and executing warfare operations and effectively allocating force weapon and sensor systems. Routinely available data sources, such as climatology, oceanographic and meteorological numerical models, and satellite remote sensing are necessary but not sufficient to support these warfare areas in the littoral and deep strike regions. Operational sensors are deployed great distances from the target area of interest. The challenge is to collect and disseminate METOC data in variable and dynamic littoral environmental conditions or in denied, remote or inaccessible areas over extended periods of time. This project: 1) provides the means to rapidly and automatically acquire a broad array of METOC data using both off-board and on-board sensors; 2) provides an on-scene assessment capability for the tactical commander; 3) provides the tactical commander with real-time METOC data and products for operational use; 4) demonstrates and validates the use of tactical workstations and desktop computers for processing and display of METOC data and products; 5) demonstrates and validates techniques which employ data compression, connectivity and interface technologies to obtain, store, process, distribute and display these METOC data and products; 6) develops new charting and bathymetric survey techniques necessary to reduce the existing shortfall in coastal hydrographic survey requirements; 7) develops an expanded database for predictive METOC models in areas of interest; and 8) supports the development of radar weather using through-the-sensor techniques.

Major emphasis areas include the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) and the Tactical Oceanographic Capabilities / Under Sea Warfare (TOC/USW) projects.

FY 2012 request provides for continued advanced software and hardware component and prototype efforts associated with acquiring environmental data, and METOC data transport, storage, delivery, design and development efforts.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> Littoral Battlespace Sensing, Unmanned Undersea Vehicles (LBS-UUV)</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Completed the System Development and Demonstration (SDD) (or Engineering and Manufacturing Development (EMD)) phase of the LBS-Glider (LBS-G) system (LBS-G Milestone C scheduled in Q4FY10). Received delivery of four LBS-G Engineering Design Models (EDMs) and completed at-sea and ashore Developmental Testing and Evaluation (DT&amp;E) of the complete end-to-end system including command and control, mission planning, launch and recovery, mission profile characteristics and other Key Performance Parameters and Key System Parameters. Completed the development of the LBS-Glider (LBS-G) Engineering Change Proposal (ECP) definition and associated engineering studies. Began the System Development and Demonstration (SDD) (or Engineering and Manufacturing Development (EMD)) phase of the LBS-Autonomous Undersea Vehicle (LBS-AUV). Funding increase reflected the beginning of the SDD phase of the LBS-AUV portion of the Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV) program.</p> <p><b>FY 2011 Plans:</b> Update LBS-G engineering studies, and cost estimates for the LBS-G ECPs as required. Continue the LBS-AUV EMD (formerly SDD) phase (LBS-AUV Milestone C (MS-C) is scheduled for Q3/Q4 FY12). Develop the LBS-AUV Capability Production Document (CPD) and other required MS-C documentation. Conduct the LBS-AUV Critical Design Review (CDR). Develop two LBS-AUV EDMs and begin associated technical and engineering reviews. FY 2012 efforts continued in PE 0604218N (Air/Ocean Equipment Engineering) project 2345 (Fleet METOC Equipment).</p>	8.003 4	2.465 2	-	-	-
<p><b>Title:</b> Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued advanced component and prototype efforts associated with acquiring environmental data. Continued development of advanced data measurement and survey techniques to improve survey planning and execution. Continued development of improved data quality control technologies and the automation of data acquisition processes. Continued to develop advanced technologies and techniques to improve Geospatial Information and Services (GI&amp;S) capabilities within Navy METOC production centers and throughout the fleet user base. Implemented Through-The-Sensor (TTS) technologies to use tactical detection systems to characterize undersea and atmospheric environment in the battlespace integrate with analysis, Command, Control, Communications, Computers and Intelligence (C4I) distribution, and tactical decision systems. Developed</p>	7.927 0	7.369 0	5.771 0	-	5.771 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy				<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>		<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
Tactical Environmental Processor (TEP) requirements, specifications, standards and system engineering plans for integration of the TEP algorithms into the Aegis SPY-1 Open Architecture upgrade program.					
<b>FY 2011 Plans:</b> Continue advanced component and prototype efforts associated with acquiring environmental data. Continue development of advanced data measurement and survey techniques to improve survey planning and execution. Continue development of improved data quality control technologies and the automation of data acquisition processes. Continue to develop advanced technologies and techniques to improve GI&S capabilities within Navy METOC production centers and throughout the fleet user base. Continued to implement TTS technologies to use tactical detection systems to characterize undersea and atmospheric environment in the battlespace integrate with analysis, distribution, and tactical decision systems. Develop advanced data acquisition and data processing techniques for oceanographic and atmospheric data.					
<b>FY 2012 Base Plans:</b> Continue advanced component and prototype efforts associated with acquiring environmental data. Continue to develop advanced data measurement and survey techniques that capture measurement uncertainties in order to provide warfare commanders with an accurate assessment of uncertainty in sensor performance prediction products and services. Continue development of improved data quality control technologies and the automation of data acquisition processes. Continue to develop advanced technologies and techniques to improve Geospatial Information and Services (GI&S) capabilities within Navy METOC production centers and throughout the fleet user base. Continue to develop and implement TTS technologies to use tactical detection systems to characterize undersea and atmospheric environment in the battlespace integrate with analysis, distribution, and tactical decision systems. Develop advanced data acquisition, data processing and analysis techniques for GI&S, oceanographic and atmospheric data and information. Develop METOC data and product delivery technologies.					
<b>Title:</b> Naval Integrated Tactical Environmental System Next Generation (NITES-Next)					
<b>Articles:</b>					
<b>FY 2010 Accomplishments:</b> Continued support for METOC data transport, storage, delivery, design and development efforts in preparation for Milestone C NITES-Next activities.					
<b>Title:</b> Tactical Oceanography Capabilities / Undersea Warfare (USW)					
<b>Articles:</b>					
	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
	0.094 0	-	-	-	-
	4.835 0	5.454 0	0.312 0	-	0.312 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b><i>FY 2010 Accomplishments:</i></b> Continued to develop, test and demonstrate advanced mission planning tools and Geographic Information Systems (GIS) in support of world-wide Undersea Warfare (USW) operations. Continued to develop capability to calculate transmission loss (TL) values in tactical timeframes to include uncertainty quantification of those values. Developed and validated both acoustic and non-acoustic USW product effectiveness algorithms to aid in environmental analysis of Naval exercises. Developed methods for a theater-wide ambient noise planning and forecasting capability. Ocean Bottom Characterization Initiative (OBCI): Developed and demonstrated advanced in-situ sensor systems to support littoral environmental awareness in support of USW missions. Used operational Navy platforms for in-situ oceanographic and acoustic measurements. Developed Next Generation bottom loss and backscatter databases and database structures. Developed improved techniques to support geoacoustic and oceanographic survey operations. Developed algorithms for inclusion of bioacoustic effects in acoustic surveys.</p> <p><b><i>FY 2011 Plans:</i></b> Develop current advanced data collection systems to generate products and populate databases that characterize the acoustic environment in support of USW missions. Develop autonomous underwater vehicle/ system (AUV) technology demonstrations to measure in-situ oceanographic, acoustic and geoacoustic parameters remotely from Fleet survey vessels. Continue to develop capabilities to calculate acoustic TL values in tactical timeframes to include uncertainty quantification of those values. Continue to develop next generation acoustic bottom loss and backscatter databases and database structures for transition into U.S. Navy USW tactical decision aids (TDAs). Conduct Validation and Verification (V&amp;V) of next generation acoustic models, databases and algorithms. Continue to develop improved techniques to support geoacoustic and oceanographic survey operations. Continue to develop algorithms for inclusion of bioacoustic effects in acoustic surveys and Navy USW operations. Develop active acoustic sources to aid geoacoustic survey operations. Provide project technical and program management oversight.</p> <p><b><i>FY 2012 Base Plans:</i></b> Develop geoacoustic sea bed characterization techniques, sensors and equipment to prepare the Battlespace for USW operations. Transition models, algorithms and databases that either calculate accurate acoustic TL or characterize environmental parameters that affect TL and develop TL calculation implementations. Develop tools that aid in oceanographic, acoustic and other environmental data visualization afloat and at reach back cells. Expand Validation and Verification (V&amp;V) efforts to include the full spectrum of Naval Oceanography enterprise</p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
(NOe) USW/acoustic support products. Develop predictive products that assess performance of non-acoustic USW sensors (radars, optical and infra-red sensors).					
The Navy has canceled all previously funded Ocean Bottom Characterization Initiative (OBCI) activities.					
<b>Accomplishments/Planned Programs Subtotals</b>	20.859	15.288	6.083	-	6.083

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/4226: <i>METEOROLOGICAL EQUIPMENT</i>	14.513	25.581	22.003	10.800	32.803	18.450	20.417	21.305	21.559	Continuing	Continuing
• RDTEN/0604218N/2345: <i>FLEET METOC EQUIPMENT</i>	5.297	4.138	4.436	0.000	4.436	2.669	2.787	2.916	2.878	Continuing	Continuing
• RDTEN/0603207N/2342: <i>METOC DATA ASSIMILATION AND MOD</i>	18.685	15.311	10.636	0.000	10.636	11.321	10.026	10.022	9.995	Continuing	Continuing
• RDTEN/0603207N/2343: <i>TACTICAL METOC APPLICATIONS</i>	15.624	13.736	9.562	0.000	9.562	8.271	0.000	0.000	0.000	Continuing	Continuing

**D. Acquisition Strategy**

Acquisition, management and contracting strategies are to support the meteorological and oceanographic (METOC) Data Acquisition Project to develop, demonstrate, and validate METOC data collection methods and sensors, and to evolve the ability to provide timely and accurate METOC data and products to the Tactical Commander, all with management oversight by the Navy.

**E. Performance Metrics**

Goal: Develop techniques and tools to acquire METOC data in order to improve the accuracy of global and regional scale meteorological and oceanographic forecast models. Advanced sensor component, data collection, and meteorological, oceanographic and hydrographic survey technique development tasks are directed by Resource Sponsor, with input from external Systems Commands and/or Type Commanders, in response to validated capability gaps or operational fleet requirements. Wherever applicable, and based on favorable Science & Technology (S&T) assessments, tasks shall leverage or transition existing Small Business Innovative Research and/or RDT&E Budget Activity 6.2 - 6.3 S&T work.

Metric -- Tasks will address no less than 75% of applicable capability gaps and requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
METOC Future Mission Capabilities	WR	Naval Research Laboartory:Washington, DC	53.982	6.519	Oct 2010	4.949	Oct 2011	-		4.949	Continuing	Continuing	Continuing
METOC Future Mission Capabilities	WR	SSC PAC:California	21.883	0.150	Oct 2010	0.150	Oct 2011	-		0.150	Continuing	Continuing	Continuing
METOC Future Mission Capabilities	Various	Various:Various	43.021	-		-		-		-	Continuing	Continuing	Continuing
LBS-G	C/CPIF	Teledyne Brown Eng:Alabama	6.557	-		-		-		-	0.000	6.557	
METOC Future Mission Capabilities	WR	NPGS:Monterey, CA	-	0.200	Oct 2010	0.200	Oct 2011	-		0.200	0.000	0.400	
METOC Future Mission Capabilities	WR	Penn State University:PA	-	0.300	Dec 2010	0.300	Dec 2011	-		0.300	0.000	0.600	
Tactical Oceanography Capabilities / Undersea Warfare (TOC USW)	WR	NRL:Washington, DC	-	1.400	Oct 2010	0.284	Oct 2011	-		0.284	0.000	1.684	
Littoral Battlespace Sensing - Autonomous Undersea Vehicle	C/FP	Hydroid INC:Pocasset, MA	-	1.865	Nov 2010	-		-		-	0.000	1.865	
Tactical Oceanography Capabilities / Undersea Warfare (TOC USW)	C/FP	Univ. of Texas:Texas	-	1.300	Dec 2010	-		-		-	0.000	1.300	
Tactical Oceanography Capabilities / Undersea Warfare (TOC USW)	WR	SSC PAC:California	-	2.754	Oct 2010	-		-		-	0.000	2.754	
<b>Subtotal</b>			125.443	14.488		5.883		-		5.883			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
METOC Future Mission Capabilities	C/CPIF	Various:Various	2.672	-		-		-		-	Continuing	Continuing	Continuing
Littoral Battlespace Sensing - Autonomous Undersea Vehicle	C/FP	SAIC:Virgina	-	0.600	Nov 2010	-		-		-	0.000	0.600	
<b>Subtotal</b>			2.672	0.600		-		-		-			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
METOC Future Mission Capabilities	WR	OPTEVFOR:Virginia	0.160	-		-		-		-	0.000	0.160	
METOC Future Mission Capabilities	MIPR	JITC:Arizona	0.040	-		-		-		-	0.000	0.040	
<b>Subtotal</b>			0.200	-		-		-		-	0.000	0.200	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Acquisition Workforce	Various	Not Specified:Not Specified	0.096	-		-		-		-	0.000	0.096	
METOC Future Mission Capabilities Management Support	C/FP	BAH:Virgina	-	0.200	Nov 2010	0.200	Nov 2011	-		0.200	0.000	0.400	
<b>Subtotal</b>			0.096	0.200		0.200		-		0.200	0.000	0.496	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			128.411	15.288		6.083		-		6.083			

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016											
	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								
METOC FMC					Database/Survey Development: GI&S Systems Development/Demonstration																															
METOC FMC					TEP Dev/Demo				Through-The-Sensor Technology Development/Demonstration																											
METOC FMC									Oceanographic & Atmospheric Data Acquisition & Processing Development/Demonstration																											

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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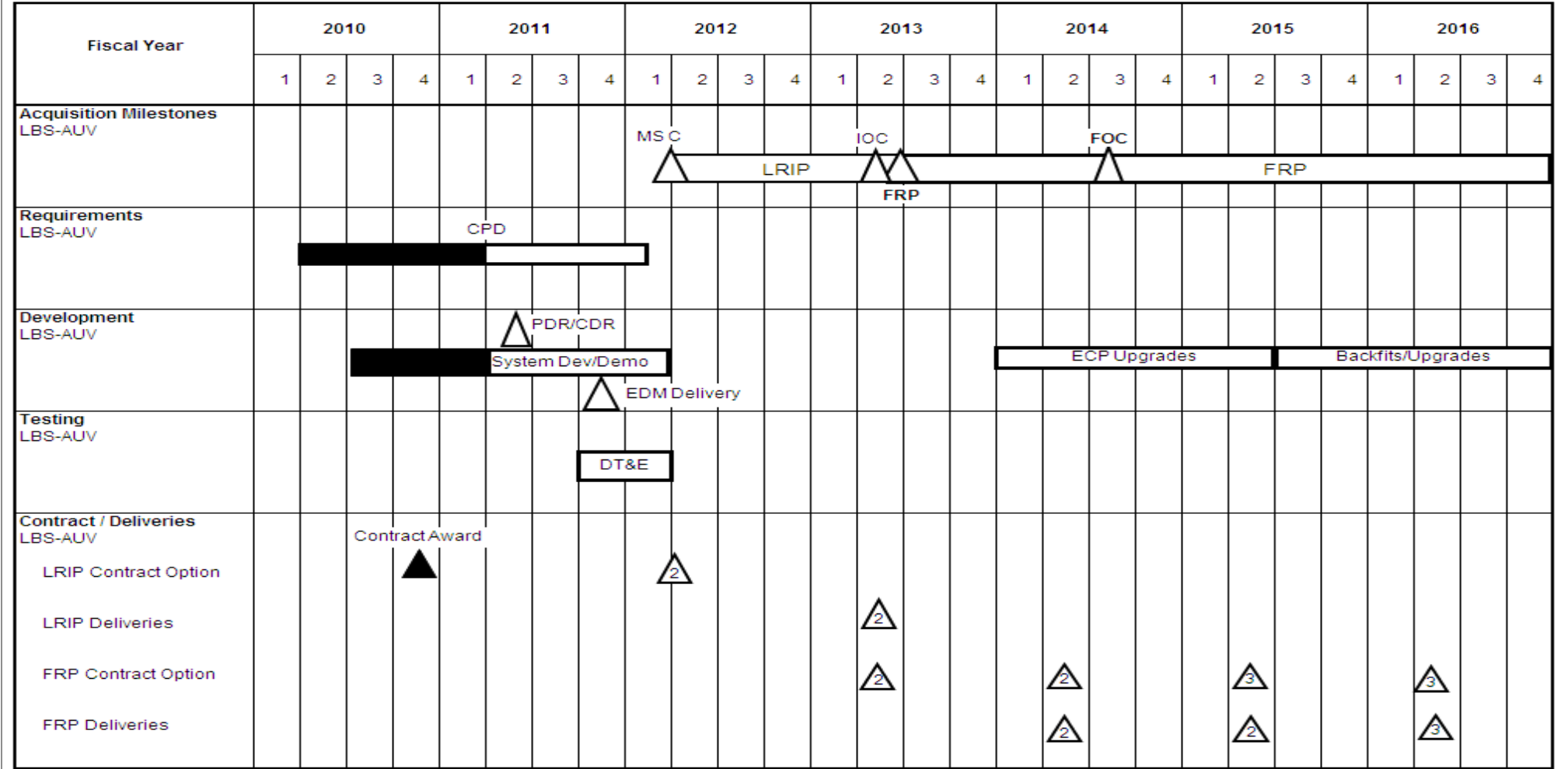
Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ambient noise collection and assimilation	AN Assimilation Tool																											
Transmission loss calculation, acceleration & surface/volumetric effects	Adaptive Gridding				Surface Boundary #1				Surface Boundary #2				Volume Effects #2				Surface Effects #3				Volume Effects #3				Integrated Acoustic Effects			
Advanced mission planning tools	Acoustic Performance Surface v1				Acoustic Performance Surface v2				Acoustic/Non-Acoustic Performance Surface				Stochastic & Integrated Performance															
Environmental database population	Sea bed loss database				Sea bed backscatter database				Combined Sea Bed Effects																			
Geoacoustic survey operation tools	Survey toolset #1				Survey toolset #2																							
Geoacoustic Autonomous Underwater Vehicle (AUV)	Sea Test / V&V				Sea Test / V&V				Tech Demo																			
Environmental data visualization					Visualization Tool				Visualization Tool				Visualization Tool				Visualization Tool											

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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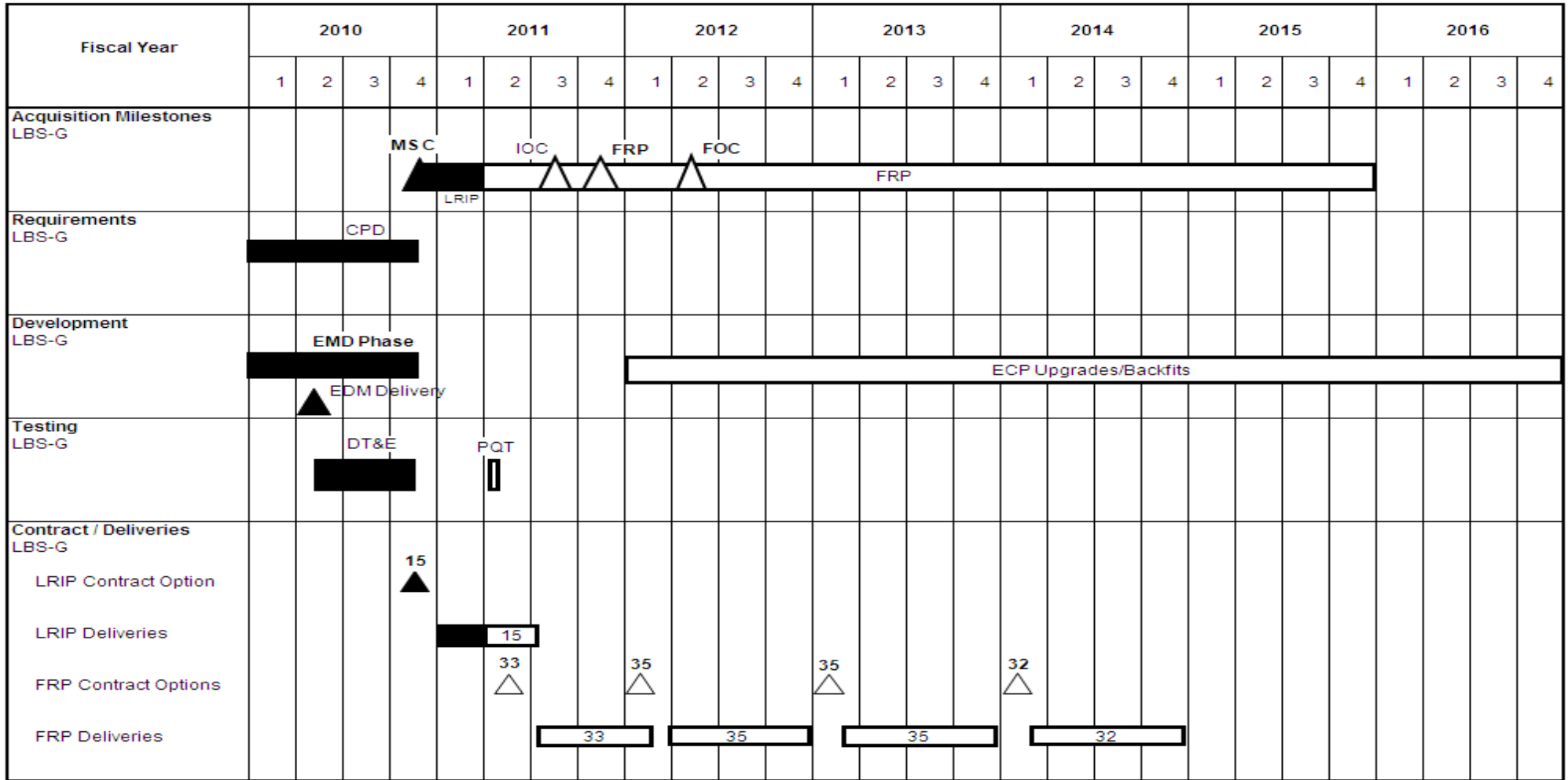
**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603207N: *Air/Ocean Tactical Applications*

**PROJECT**  
 2341: *METOC Data Acquisition*



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2341</b>				
Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC) Geospacial Information and Services (GI&S) System Development / Demonstration	1	2010	4	2016
METOC FMC Tactical Environmental Processor (TEP) Development / Demonstration	1	2010	4	2011
METOC FMC Ocean-Atmos Acquisition & Processing Development / Demonstration	1	2011	4	2016
METOC FMC Through-the-Sensor (TTS) Development / Demonstration	1	2012	4	2016
Tactical Oceanography Capabilities (TOC) / Undersea Warfare (USW) Acoustic Performance Surface v1	3	2010	3	2010
TOC USW Sea Test / V&V 1	3	2010	3	2010
TOC USW AN Assimilation Tool	4	2010	4	2010
TOC USW Adaptive Gridding 1	4	2010	4	2010
TOC USW Survey toolset #1	1	2011	1	2011
TOC USW Adaptive Gridding 2	2	2011	2	2011
TOC USW Sea Test / V&V 2	2	2011	2	2011
TOC USW Surface Boundary #1	3	2011	3	2011
TOC USW Acoustic Performance Surface v2	4	2011	4	2011
TOC USW Sea bed loss database	4	2011	4	2011
TOC USW Survey toolset #2	4	2011	4	2011
TOC USW Tech Demo	4	2011	4	2011
TOC USW Visualization Tool toolset #1	4	2011	4	2011
TOC USW Volume Effects #1	1	2012	1	2012
TOC USW Surface Boundary #2	4	2012	4	2012
TOC USW Sea bed backscatter database	4	2012	4	2012

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TOC USW Visualization Tool toolset #2	4	2012	4	2012
TOC USW Volume Effects #2	3	2013	3	2013
TOC USW Acoustic/Non-Acoustic Performance Surface	4	2013	4	2013
TOC USW Visualization Tool toolset #3	4	2013	4	2013
TOC USW Surface Effects #3	3	2014	3	2014
TOC USW Combined Sea Bed Effects DB	4	2014	4	2014
TOC USW Visualization Tool toolset #4	1	2015	1	2015
TOC USW Volume Effects #3	3	2015	3	2015
TOC USW Stochastic & Integrated Performance Surface	4	2015	4	2015
TOC USW Integrated Acoustic Effects	3	2016	3	2016
Littoral Battlespace Sensing, Unmanned Undersea Vehicles (LBS-UUV) - Autonomous Undersea Vehicles (LBS-AUV) Capabilities Production Document	2	2010	1	2012
LBS-AUV System Development & Demonstration	3	2010	1	2012
LBS-AUV Contract Award	4	2010	4	2010
LBS-AUV Preliminary Design Review (PDR)	2	2011	2	2011
LBS-AUV Critical Design Review (CDR)	2	2011	2	2011
LBS-AUV Enterprise Data Model (EDM) Delivery	4	2011	4	2011
LBS-AUV Development, Test, & Evaluation (DT&E)	4	2011	1	2012
LBS-AUV Milestone C (MS C)	1	2012	2	2012
LBS-AUV Low Rate Initial Production (LRIP) Contract Option: 2	1	2012	2	2012
LBS-AUV Initial Operational Capability (IOC)	2	2013	2	2013
LBS-AUV LRIP Deliveries: 2	2	2013	2	2013
LBS-AUV Full Rate Production (FRP)	2	2013	4	2016
LBS-AUV Full Rate Production (FRP) Contract Option: 2	2	2013	2	2013

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LBS-AUV Engineering Change Proposals (ECPs) Upgrades	1	2014	2	2015
LBS-AUV FRP Contract Option: 2	2	2014	2	2014
LBS-AUV 1st FRP Deliveries: 2	2	2014	2	2014
LBS-AUV Full Operational Capability (FOC)	3	2014	3	2014
LBS-AUV FRP Contract Option: 3	2	2015	2	2015
LBS-AUV 2nd FRP Deliveries: 2	2	2015	2	2015
LBS-AUV Backfits / Upgrades	3	2015	4	2016
LBS-AUV LBS-AUV FRP Contract Option: 3	2	2016	2	2016
LBS-AUV LBS-AUV 3rd FRP Deliveries: 3	2	2016	2	2016
Littoral Battlespace Sensing, Unmanned Undersea Vehicles (LBS-UUV) - Gliders (LBS-G) CPD	1	2010	4	2010
LBS-G EMD Phase	1	2010	4	2010
LBS-G EDM Delivery	2	2010	2	2010
LBS-G DT&E	2	2010	4	2010
LBS-G MS C	4	2010	4	2010
LBS-G LRIP Contract Option: 15	4	2010	4	2010
LBS-G LRIP Deliveries: 15	1	2011	3	2011
LBS-G Production Qualification Testing (PQT)	2	2011	2	2011
LBS-G 1st FRP Contract Option: 33	2	2011	2	2011
LBS-G IOC	3	2011	3	2011
LBS-G 1st FRP Deliveries: 33	3	2011	1	2012
LBS-G FRP	4	2011	4	2011
LBS-G 2nd FRP Contract Option: 35	1	2012	1	2012
LBS-G ECP Upgrades / Backfits	1	2012	4	2016

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2341: <i>METOC Data Acquisition</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LBS-G FOC	2	2012	2	2012
LBS-G 2nd FRP Deliveries: 35	2	2012	4	2012
LBS-G 3rd FRP Contract Option: 35	1	2013	1	2013
LBS-G 3rd FRP Deliveries: 35	1	2013	4	2013
LBS-G 4th FRP Contract Option: 32	1	2014	1	2014
LBS-G 4th FRP Deliveries: 32	1	2014	4	2014

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2342: <i>METOC Data Assimilation and Mod</i>	18.685	15.311	10.636	-	10.636	11.321	10.026	10.022	9.995	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

Littoral Battlespace Sensing, Unmanned Undersea Vehicle (LBS-UUV) FY 2012 efforts continued in PE 0604218N (Air/Ocean Equipment Engineering) project 2345 (Fleet METOC Equipment).

**A. Mission Description and Budget Item Justification**

The meteorological and oceanographic (METOC) Data Assimilation Project is a multi-faceted project that provides future mission capabilities for warfighters to characterize the physical environment within their battlespace. This project includes: 1) development, demonstration and validation of atmospheric and oceanographic data assimilation techniques, forecast models, database management systems, and associated software for use in both mainframe and tactical scale computers. Included are numerical oceanographic and atmospheric models for the Large Scale Computers at the Navy Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA and the Naval Oceanographic Office (NAVO), Stennis Space Center, MS. These models, combined with a global communications network for data acquisition and distribution, form a prediction system which provides METOC data and products necessary to support naval operations worldwide in virtually every mission area; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder; 4) future METOC and environmental satellite data readiness and risk reduction preparations to develop hardware and software that will allow ground stations to receive, ingest and exploit satellite data including the National Polar Orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP), the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Polar Systems' Meteorological Operational satellites A & B (METOP-A & B), Joint Polar Satellite System (JPSS), and Defense Meteorological Satellite Program (DMSP). These techniques allow for the integration and tactical application of significant oceanographic and atmospheric data derived from satellite-borne sensors. Satellite and unmanned sensor data, combined with manned platform data are foundational to a robust numerical weather and oceanographic modeling capability that predicts battlespace conditions impacting fleet and adversary weapon and sensor performance. Included are techniques and algorithms for the processing of sensor measurements, conversion of raw signal data to geophysical information, analysis schemes encompassing Artificial Intelligence and Expert Systems, and other satellite data applications and field validation of end products; and, 5) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products. As weapons and sensors become more sophisticated and complex, the marine environment has an increasingly significant impact on system performance. Operational limitations induced by the ocean and atmosphere must be understood, and the resulting constraints on mission effectiveness and system employment minimized. Hence, the operating forces require more accurate worldwide forecasts of METOC conditions with increased temporal and spatial resolution. An additional challenge is posed by the emergence of new satellite sensor data. In order to fully exploit this dynamic and massive volume of data, modern Data Base Management Systems are required, and must be tailored for individual computer configurations at both FNMOC and NAVO. Improved representation of smaller-scale phenomena, particularly in the littoral, is also an important consideration. Intelligence Preparation of the Environment Sensor R&D to meet Chief of Naval

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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Operations and Commander, Fleet Forces Command requirements for remote autonomous, clandestine, littoral battlespace sensing in near shore areas in support of Sea Shield & Sea Basing.

Major emphasis areas include the Meteorological and Oceanographic Future Mission Capabilities (METOC) the Meteorological and Oceanographic (METOC) Space-Based Sensing Capabilities, and the Tactical Oceanographic Capabilities / Under Sea Warfare projects.

FY 2012 request provides for continued advanced component development and prototype efforts associated with advanced data assimilation into environmental prediction systems (to include development of tactical decision aids and asset allocation tools), the continued development of advanced oceanographic and atmospheric prediction systems and architectures to provide improved forecasts and estimates of product accuracies, continued development of improved data fusion techniques, data quality control technologies and accelerate the automation prediction processes, and the development of data assimilation and fusion techniques and technologies for tactical radars, remote sensing and undersea sensor systems.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> Littoral Battlespace Sensing, Unmanned Undersea Vehicle (LBS-UUV)</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Demonstrated a basic capability to assimilate, database, and relay data and derived products from ocean gliders, including optics (glider analysis, satellite coupling, Navy Coastal Ocean Model integration, etc.), temperature, depth, salinity, and currents. Demonstrated prototype mission planning and adaptive sampling capability as part of the Littoral Battlespace Sensing - Gliders (LBS-G) System Development and Demonstration (SDD) (or Engineering and Manufacturing Development (EMD)) phase. Development of advanced bathymetric data assimilation techniques such as Inertial Navigation Drift, automated fusion, micronavigation, and feature based navigation. Continued to define the LBS-UUV Engineering Change Proposal (ECP) Fusion requirements and capabilities. Integrated advanced quality control algorithms into the LBS-G system as required as part of the SDD (EMD) phase of the procurement. Completed at-sea and ashore Development Testing and Evaluation of the complete end-to-end glider system including command and control, mission planning, mission profile characteristics and other Key Performance Parameters and Key System Parameters. Began the SDD (EMD) phase of the Littoral Battlespace Sensing - Autonomous Undersea Vehicle (LBS-AUV).</p> <p><b>FY 2011 Plans:</b> Develop advanced LBS-G and LBS-AUV data fusion efforts. Demonstrate prototype mission planning and adaptive sampling capability at the Naval Oceanographic Office (NAVOCEANO). Begin integration of advanced</p>	1.800 0	0.473 0	- -	- -	- -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
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quality control algorithms as required into the LBS-AUV program as part of its SDD (EMD) phase. Continue the LBS-AUV SDD (EMD) Phase.					
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<b>Title:</b> Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	8.541	6.250	4.758	-	4.758
<b>Articles:</b>	0	0	0		0

**FY 2010 Accomplishments:**  
Continued advanced component development and prototype efforts associated with advanced data assimilation into environmental prediction systems, to include development of tactical decision aids and asset allocation tools. Continued development of advanced oceanographic and atmospheric prediction systems and architectures to provide improved forecasts and estimates of product accuracies. Continued development of improved data fusion techniques, data quality control technologies and accelerate the automation prediction processes. Developed data assimilation and fusion techniques and technologies for tactical radars, remote sensing and undersea sensor systems. Developed atmospheric fusion algorithms and demonstrate Tactical Environmental Processor (TEP) reachback fusion capability. Developed network integration capability and continued to develop systems engineering plans, requirements, standards, studies, and other documentation supporting integration of these products. Developed advanced data assimilation and data quality control algorithms for glider and Autonomous Undersea Vehicles (AUVs) data including, temperature, depth, salinity, optics, hydrographic, bathymetric and other water column and ocean bottom properties.

**FY 2011 Plans:**  
Continue advanced component development and prototype efforts associated with advanced data assimilation into environmental prediction systems, to include development of tactical decision aids and asset allocation tools. Continue development of advanced oceanographic and atmospheric prediction systems and architectures to provide improved forecasts and estimates of product accuracies. Continue development of improved data fusion techniques, data quality control technologies and accelerate the automation of and visualization of prediction processes leading to improved weapon and sensor allocation decisions. Continue to develop data assimilation and fusion techniques and technologies for tactical radars, remote sensing and undersea sensor systems. Continue to develop atmospheric fusion algorithms and demonstrate TEP reachback fusion capability. Continue development of network integration capability and continue to develop systems engineering plans, requirements, standards, studies, and other documentation supporting integration of these products. Continue development of advanced data assimilation and data quality control algorithms for glider and AUVs data

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
including, temperature, depth, salinity, optics, hydrographic, bathymetric and other water column and ocean bottom properties.					
<p><b><i>FY 2012 Base Plans:</i></b> Continue advanced component development and prototype efforts associated with advanced data assimilation into environmental prediction systems, to include development of tactical decision aids and asset allocation tools. Continue development of advanced oceanographic and atmospheric prediction systems and architectures to provide improved forecasts and estimates of product accuracies. Continue development of improved data fusion techniques, data quality control technologies and accelerate the automation of prediction processes. Continue to develop data assimilation and fusion techniques and technologies for tactical sensors, remote sensing and undersea sensor systems. Continue to develop atmospheric fusion algorithms and demonstrate reach-back fusion capability. Continue to develop network integration capability and continue to develop systems engineering plans, requirements, standards, studies, and other documentation supporting integration of these products.</p>					
<p><b><i>Title:</i></b> Meteorological and Oceanographic (METOC) Space-Based Sensing Capabilities</p> <p align="right"><b><i>Articles:</i></b></p>	4.903 0	5.008 0	2.787 0	-	2.787 0
<p><b><i>FY 2010 Accomplishments:</i></b> Continued development of techniques for the assimilation of data from current and future civil, military and international earth observing systems. Developed Naval applications using this data for Naval METOC Production Centers. Funding increase reflects the need for additional data assimilation algorithms and applications resulting from the anticipated launch of the National Polar Orbiting Operational Environmental Satellite System Preparatory Project (NPP) satellite in FY11.</p>					
<p><b><i>FY 2011 Plans:</i></b> Begin development of the satellite data assimilation algorithms using NPP data. Continue development of techniques for the assimilation of data from current and future civil, military and international earth observing systems. Continue research and development of data assimilation processes and advanced modeling techniques for ingesting satellite sensor data.</p>					
<p><b><i>FY 2012 Base Plans:</i></b> Begin development of the data processing and data assimilation algorithms using National Polar Orbiting Operational Environmental Satellite System Preparatory Project (NPP), Meteorological Operational satellite program (MetOp), and Defense Meteorological Satellite Program (DMSP) satellite data. Continue development</p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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of techniques for the assimilation of data from current and future civil, military and international earth observing systems. Conduct research and development of data processing techniques, data assimilation processes and advanced modeling methodologies utilizing satellite sensor data to generate METOC products. Prepare to utilize data from follow-on DoD Satellites to develop METOC products.

<b>Title:</b> Tactical Oceanographic Capabilities (TOC) / Undersea Warfare (USW)	3.441	3.580	3.091	-	3.091
<b>Articles:</b>	0	0	0		0

***FY 2010 Accomplishments:***

Continued to develop decision tool asset allocation and mission planning modules to optimize deployment of both environmental data collection assets and tactical Undersea Warfare (USW) acoustic and non-acoustic sensors. Continued to refine and validate USW-related performance assessment and decision products for use at the Naval Oceanographic Office (NAVOCEANO) Anti-Submarine Warfare (ASW) Reachback Cell (RBC) and in USW decision tools. Continued spiral development of active and passive acoustic propagation loss models for use in fleet mission planning systems supporting mono- and multistatic Antisubmarine Warfare operations. Continued technology upgrades to transmission loss acceleration algorithms. Developed algorithms that characterize acoustic reverberation as well as boundary and volume loss/scatter functions as observed by active and passive tactical sonar systems. Developed decision tool algorithms that optimize operational sonar system performance. Continued to develop directional and omnidirectional regional ambient noise characterization tools. Conducted technical demonstration of in-situ ocean parameter collection systems. Populated/upgraded oceanographic and acoustic databases in Combatant Commanders (COCOM) areas of interest. Transitioned algorithms that capture and communicate variability and uncertainty, robustness and sensitivity as input to Fleet USW decision tools and underlying models and data bases. Developed oceanographic operations analysis tools. Developed real-time and post-event ASW performance assessment tools.

***FY 2011 Plans:***

Continue to develop decision tool asset allocation and mission planning modules to optimize deployment of both environmental data collection assets and tactical USW acoustic and non-acoustic sensors. Continue to refine and validate USW-related performance assessment and decision products for use at the NAVOCEANO ASW RBC and in USW decision tools. Develop algorithms for quantification of volume scattering effects on active sonar. Continue spiral development of active and passive acoustic propagation loss models for use in fleet mission planning systems supporting mono- and multistatic USW operations. Continue technology upgrades to transmission loss acceleration algorithms. Continue to develop algorithms that characterize acoustic volume loss/scatter functions as observed by active tactical sonar systems. Develop sea surface and

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>seabed boundary interaction characterizations to support sensor performance predictions. Expand capabilities and increase access speed of acoustic surface scattering and loss modules. Continue to develop directional and omnidirectional regional ambient noise characterization and forecasting tools. Continue to populate/upgrade oceanographic and acoustic databases in Combatant Commanders (COCOM) areas of interest. Continue to transition algorithms that capture and communicate variability and uncertainty, robustness and sensitivity as input to Fleet ASW decision tools and underlying models and data bases. Develop an ASW RBC ocean model assessment toolkit. Develop post-USW event Reconstruction and Analysis (R&amp;A) validation tools and capabilities. Develop ASW Reachback Cell (RBC) visual analysis toolset. Begin capability upgrades and validation of Next Generation electro-magnetic and electro-optic performance prediction systems and decision tools.</p> <p><b><i>FY 2012 Base Plans:</i></b> Continue visualization and decision tool development that assist USW warfighters to optimally deploy assets equipped with both acoustic and non-acoustic sensors and to take advantage of prevailing environmental conditions. Continue to refine and validate USW-related performance surface and decision products for use afloat and at reachback cells to determine appropriate tactical Courses of Action (COAs). Build a second generation USW R&amp;A capability to support the Naval Oceanographic enterprise (NOe.) Build an overarching ambient noise characterization architecture that expediently and accurately relays effects of natural and man-made noise on Naval acoustic sensors conducting USW operations. Continue population/upgrade of oceanographic and acoustic databases in USW areas of interest. Transition algorithms that capture and communicate variability and uncertainty contained in the output of underlying model and data base components of ASW TDAs. Expand capabilities and increase access speed of acoustic surface scattering and loss modules. Populate/upgrade oceanographic and acoustic databases in COCOM areas of interest. Develop post-USW event Reconstruction and Analysis (R&amp;A) validation tools and capabilities. Continue capability upgrades and validation of Next Generation electro-magnetic and electro-optic performance prediction systems and decision tools. Continue development of an ASW RBC ocean model assessment toolkit.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	18.685	15.311	10.636	-	10.636

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>

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

Line Item	FY 2010	FY 2011	FY 2012			FY 2013	FY 2014	FY 2015	FY 2016	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPN/4226: <i>METEOROLOGICAL EQUIPMENT</i>	14.513	25.581	22.003	10.800	32.803	18.450	20.417	21.305	21.559	Continuing	Continuing
• RDTEN/0604218N/2345: <i>FLEET METOC EQUIPMENT</i>	5.297	4.138	4.436	0.000	4.436	2.669	2.787	2.916	2.878	Continuing	Continuing
• RDTEN/0603207N/2341: <i>METOC DATA ACQUISITION</i>	20.859	15.288	6.083	0.000	6.083	6.802	6.807	6.981	6.940	Continuing	Continuing
• RDTEN/0604218N/2346: <i>METOC SENSOR ENGINEERING</i>	2.483	1.597	1.486	0.000	1.486	1.472	1.508	1.531	1.546	Continuing	Continuing
• RDTEN/0305160N/0524: <i>NAVY METOC SUPPORT</i>	1.057	0.936	0.904	0.000	0.904	0.822	0.833	0.880	0.890	Continuing	Continuing

**D. Acquisition Strategy**

Acquisition, management and contracting strategies to support the METOC Data Assimilation Project which is a multi-faceted program which includes: 1) development, demonstration and validation of atmospheric and oceanographic data assimilation techniques, forecast models, database management systems, and associated software for use in both mainframe and tactical scale computers; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder; and, 4) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products.

**E. Performance Metrics**

Goal: Develop techniques and tools to assimilate meteorological and oceanographic (METOC) data in order to improve the accuracy of global and regional scale meteorological and oceanographic forecast models. Data assimilation is expanded to include new in-situ and remotely-sensed data types, based on operational need. Tasks are directed toward advanced techniques enabling assimilation of disparate sources on non-synoptic time scales. Acoustic, atmospheric, and oceanographic model development, prototyping and transition is focused on improved model physics, increased resolution, and computational efficiency. Metric -- Tasks will address no less than 75% of applicable capability gaps and requirements.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
METOC Future Mission Capabilities	WR	NRL:Washington DC	102.569	6.050	Oct 2010	4.644	Oct 2011	-		4.644	Continuing	Continuing	Continuing
METOC Future Mission Capabilities	WR	SSCs:California, South Carolina	2.272	-		-		-		-	Continuing	Continuing	Continuing
METOC Future Mission Capabilities	Various	Various:Various	41.183	-		-		-		-	Continuing	Continuing	Continuing
METOC Future Mission Capabilities	FFRDC	Univ. S. Miss.:Mississippi	2.413	-		-		-		-	0.000	2.413	
METOC Space-Based Sensing Capabilities	WR	NRL:Washington, DC	-	4.608	Oct 2010	2.445	Oct 2011	-		2.445	0.000	7.053	
Tactical Oceanography Capabilities / Undersea Warfare	WR	NRL:Washington, DC	-	2.130	Oct 2010	1.851	Oct 2011	-		1.851	0.000	3.981	
Tactical Oceanography Capabilities / Undersea Warfare	WR	University of Texas:TX	-	0.700	Dec 2010	0.598	Dec 2011	-		0.598	0.000	1.298	
Tactical Oceanography Capabilities / Undersea Warfare	WR	NSWC Carderock:West Bethesda, MD	-	0.450	Oct 2010	0.399	Oct 2011	-		0.399	0.000	0.849	
Tactical Oceanography Capabilities / Undersea Warfare	WR	NAVOCEANO:Mississippi	-	0.300	Oct 2010	0.249	Oct 2011	-		0.249	0.000	0.549	
<b>Subtotal</b>			148.437	14.238		10.186		-		10.186			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
METOC Future Mission Capabilities	C/CPIF	SSA/CSC:MISC	0.295	-		-		-		-	0.000	0.295	
	C/FP	SAIC:Virgina	-	0.473	Nov 2010	-		-		-	0.000	0.473	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
METOC FMC					Data Assimilation into Environmental Prediction Systems																							
METOC FMC					Develop Oceanographic & Atmospheric Forecast Models																							
METOC FMC					Oceanographic & Atmospheric Forecast Model Data Assimilation																							
METOC FMC					Demonstrate TEP Reachback Fusion Capability																							
METOC FMC					Oceanographic & Atmospheric Forecast Model Network Integration																							

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016							
	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				
<b>METOC Space-Based Sensing Capabilities:</b>																																
NPOESS Preparatory Project (NPP) / Joint Polar Satellite System (JPSS)	Data Assimilation Algorithm								▲																	△	→					
									NPP Launch																JPSS-1 Launch							
EUMETSAT Satellite data added to Operational Environmental Data Assimilation					△	METOP-A Data				△	METOP-B Data																				→	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603207N: *Air/Ocean Tactical Applications*

**PROJECT**

2342: *METOC Data Assimilation and Mod*

Fiscal Year	2010				2011				2012				2013				2014				2015				2016							
	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				
<b>Tactical Oceanographic Capabilities (TOC) / Undersea Warfare (USW):</b>																																
Asset allocation & mission planning			▲									▲				▲				▲												
	ASW RBC Delivery #1				ASW TDA Delivery				ASW RBC Delivery #2				ASW TDA Delivery																			
Performance surface toolset			▲					▲								▲												▲				
	Acoustic Performance Surface v1				Acoustic Performance Surface v2				Acoustic/Non-Acoustic Performance Surface				Acoustic/Non-Acoustic Performance Surface																			
Descriptive dynamic oceanography assessment Tool				▲				▲				▲																				
	ARCOAS Delivery #2				ARCOAS Delivery #3				ARCOAS Delivery #4																							
Acoustic model upgrades				▲				▲				▲				▲				▲								▲				
	CASS/ASPM/PE Upgrades				CASS/ASPM/PE Upgrades				CASS/ASPM/PE Upgrades				NEXGEN TL Model delivery #1				NEXGEN TL Model delivery #2															
STAPLE upgrades				▲				▲				▲				▲				▲								▲				▲
	Delivery #4				Delivery #5				Delivery #5				Delivery #7				Delivery #8				Delivery #9				Delivery #10							
Boundary interaction algorithms								▲				▲								▲												
	SESSS algorithm V&V				TOTLOSS algorithm V&V				TOTLOSS/SCATTER algorithm																							
ASW R&A				▲				▲				▲				▲																
	NOe ASW product V&V				NOe ASW product V&V				NOe ASW product V&V				NOe ASW product V&V																			
Ambient noise characterization				▲				▲				▲				▲				▲								▲				
	AN Archive				AN Archive				Directional AN Buoy				AN Archive				AN GIS Forecast Tool				Directional AN Buoy OPTEST											
Through-The-Sensor data collection/assimilation												▲								▲												▲
					Geo-acoustic data assimilation				Geo-acoustic collection sea test								Transition															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2342</b>				
METOC FMC Develop Oceanographic and Atmospheric Forecast Models	1	2010	4	2016
METOC FMC Oceanographic and Atmospheric Forecast Model Data Assimilation	1	2010	4	2016
METOC FMC Demonstrate TEP Reachback Fusion Capability	1	2010	4	2016
METOC FMC Oceanographic and Atmospheric Forecast Model Network Integration	1	2010	4	2016
METOC SPACE Data Assimilation Algorithm	1	2010	4	2016
METOC SPACE EUMETSAT Meteorological Operational satellites for European Organization for Exploitation of Meteorological Satellites (METOP) - A Satellite Data Assimilation	2	2011	2	2011
METOC SPACE National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP) Launch	4	2011	4	2011
METOC SPACE METOP-B Satellite Data acquired and added to Operational Environment Data Assimilation	2	2012	2	2012
METOC SPACE Joint Polar Satellite System (JPSS) 1 Launch	1	2016	1	2016
TOC USW ASW Reachback (RBC) Delivery #1	3	2010	3	2010
TOC USW Acoustic Performance Surface v1	3	2010	3	2010
TOC USW ARCOAS Delivery #2	4	2010	4	2010
TOC USW Staple Upgrades Delivery #4	4	2010	4	2010
TOC USW NOe ASW Product V&V 1	4	2010	4	2010
TOC USW CASS/ASPM/PE Upgrades 1	1	2011	1	2011
TOC USW Ambient Noise (AN) Archive 1	1	2011	1	2011
TOC USW SESSS Algorithm V&V	2	2011	2	2011
TOC USW Acoustic Performance Surface v2	4	2011	4	2011

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TOC USW ARCOAS Delivery #3	4	2011	4	2011
TOC USW STAPLE Upgrades Delivery #5	4	2011	4	2011
TOC USW NOe ASW Product V&V 2	4	2011	4	2011
TOC USW TDA Delivery 1	1	2012	1	2012
TOC USW Ambient Noise (AN) Archive 2	1	2012	1	2012
TOC USW CASS/ASPM/PE Upgrades 2	2	2012	2	2012
TOC USW ARCOAS Delivery #4	4	2012	4	2012
TOC USW STAPLE Delivery #6	4	2012	4	2012
TOC USW TOTLOSS Algorithm V&V	4	2012	4	2012
TOC USW NOe ASW Product V&V 3	4	2012	4	2012
TOC USW Geo-acoustic data assimilation	4	2012	4	2012
TOC USW Directional AN Buoy	1	2013	1	2013
TOC USW ASW RBC Delivery #2	3	2013	3	2013
TOC USW Acoustic / Non-Acoustic Performance Surface	4	2013	4	2013
TOC USW CASS/ASPM/PE Upgrades 3	4	2013	4	2013
TOC USW STAPLE Upgrades Delivery #7	4	2013	4	2013
TOC USW NOe ASW Product V&V 4	4	2013	4	2013
TOC USW Ambient Noise (AN) Archive 3	4	2013	4	2013
TOC USW Geo-acoustic collection sea test	2	2014	2	2014
TOC USW TDA Delivery 2	4	2014	4	2014
TOC USW STAPLE Upgrades Delivery #8	4	2014	4	2014
TOC USW TOTLOSS/SCATTER Algorithm	4	2014	4	2014
TOC USW AN GIS Forecast Tool	1	2015	1	2015
TOC USW NEXGEN TL Model Delivery #1	1	2015	1	2015

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2342: <i>METOC Data Assimilation and Mod</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
TOC USW Acoustic / Non-acoustic Performance Surface v2	4	2015	4	2015
TOC USW STAPLE Upgrades Delivery #9	4	2015	4	2015
TOC USW Directional AN Buoy OPTTEST	1	2016	1	2016
TOC USW NEXGEN TL Model Delivery #2	2	2016	2	2016
TOC USW STAPLE Upgrade Delivery #10	4	2016	4	2016
TOC USW Through-the-Sensor (TTS) transition	4	2016	4	2016
Data Assimilation into Environmental Prediction Systems	1	2010	4	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2343: <i>Tactical METOC Applications</i>	15.624	13.736	9.562	-	9.562	8.271	-	-	-	0.000	47.193
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Tactical Meteorological and oceanographic (METOC) Applications Project provides future operational effects decision aid capabilities for Navy and Marine Corps warfighters in the context of Joint Operations in a net-centric environment. This project identifies and transitions state-of-the-art decision support software technologies from the government's and commercial Industry's technology base and then demonstrates and validates these capabilities before fielding. These software decision support tools provide platform, sensor, communications, and weapon systems performance assessments for warfighters in terms of their littoral and deep-strike battlespace environments. These assessments allow mission planners and warfighters, from the unit to theater level, to optimize their sensor employment on airborne, surface, and subsurface platforms in support of all Naval Composite Warfare mission areas including Undersea Warfare (USW), Anti-Submarine Warfare (ASW), Mine Warfare, Amphibious Warfare (AMW), Anti-Surface Warfare (ASUW), Anti-Air Warfare (AAW), Strike Warfare (STW), and Naval Special Warfare (NSW). Performance assessments leading to improvements in operational and tactical control are conducted through a two-tiered approach: 1) METOC Decision Aids (MDAs) and, 2) Operational Effects Decision Aids (OEDAs). MDAs consist of a series of analysis tools which characterize the physical environment conditions of the battlespace based on the best set of physical environment data available at the time (i.e., some combination of historical and/or real-time (or near real-time) in-situ, and numerically modeled forecast data). OEDAs then use the MDA information by fusing it with relevant, often-classified sensor and target data to predict how own-force weapons and sensor systems will perform against hostile targets. Performance results are displayed in tabular and graphic formats integrated into net-centric visualization tools for use by mission planners and combat/weapon system operators to develop localization plans, USW/AAW/ASUW screens, STW profiles, AMW ingress and egress points, and for other warfare considerations. MDAs and OEDAs typically use data derived from sensors developed in Project 2341 (METOC Data Acquisition) and assimilated by software produced by Project 2342 (METOC Data Assimilation and Modeling). MDAs and OEDAs also use data obtained through direct interfaces to Navy combat systems. A current emphasis area of the project is capabilities required to characterize and/or predict sensor and weapons system performance in the highly complex littoral environments in support of regional conflict scenarios. It addresses multi-warfare areas, particularly shallow water ASW, NSW, and missile and air defense/strike capabilities.

The major emphasis of this project is the software only Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program of record.

FY 2012 increase provides for the ramp up of NITES-Next Release 1 software development efforts including extensive system architecture and system design development and Configuration Management efforts.

Beginning in FY14 the Navy has canceled all Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program development efforts.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> Naval Integrated Tactical Environmental System Next Generation (NITES-Next)	15.348	13.736	9.562	-	9.562

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Articles:</b>	0	0	0		0
<p><b><i>FY 2010 Accomplishments:</i></b> Continued development of system architecture, system engineering, software development, test and integration activities for NITES-Next System Development and Demonstration (SDD) (or Engineering and Manufacturing Development (EMD)), including integration into next generation Electromagnetic and Electro-optical (EM/EO) and performance prediction systems. Conducted NITES-Next Release 1 System Readiness Review (SRR)/ System Functional Review (SFR) and System Design Review (SDR) involving lab, fleet and site testing and early Commander, Operational Test &amp; Evaluation Force (COMOPTEVFOR) involvement. Initiated extensive NITES-Next software development across the multiple Computer Software Configuration Items.</p> <p><b><i>FY 2011 Plans:</i></b> Conduct NITES-Next Design Readiness Review. Continue the development of NITES-Next Release 1 system architecture, system engineering, and software, including integration with next generation Electromagnetic and Electro-optical (EM/EO) and performance prediction systems. Conduct NITES-Next Release 1 Preliminary Design Review (PDR) and Critical Design Review (CDR) involving lab, fleet and site testing and early COMOPTEVFOR involvement. Continue Developmental Test and Evaluation efforts involving lab, fleet and site testing.</p> <p><b><i>FY 2012 Base Plans:</i></b> Continue software Engineering and Manufacturing Development (EMD) efforts for NITES-Next Release 1. Continue the development of NITES-Next Release 1 system design including the software architecture design. Begin preparation for all Technical Readiness Reviews, Developmental Test and Evaluation (DT&amp;E), and Initial Operational Test and Evaluation (IOT&amp;E) efforts scheduled for FY 2013. Begin preparations for the award of the NITES-Next Release 2 contract option. All Release 1 contractor developmental test and evaluation activities have been deferred to FY 2013.</p>					
<p><b><i>Title:</i></b> Tactical Oceanographic Capabilities (TOC) / Undersea Warfare (USW)</p> <p style="text-align: right;"><b><i>Articles:</i></b></p> <p><b><i>FY 2010 Accomplishments:</i></b> Continued capability upgrades and validation of Next Generation electro-magnetic and electro-optic performance prediction systems and decision tools. Developed Through-the Sensor technologies to characterize atmospheric boundary layer parameters for Anti-Submarine Warfare applications.</p>	0.276 0	-	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	15.624	13.736	9.562	-	9.562

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>

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

N/A

**D. Acquisition Strategy**

Acquisition, management and contracting strategies are to support the Tactical METOC Applications project to continue the development of state-of-the-art software capabilities that provide sensor, communication, and weapon system performance assessments across the full spectrum of open ocean and littoral operating environments, meteorology and oceanography , all with management oversight incorporating these into the Naval Integrated Tactical Environmental System Next Generation program under Joint Capabilities Integration and Development System (JCIDS) by the Department of the Navy (DoN).

**E. Performance Metrics**

Goal: Develop meteorological and oceanographic (METOC) future operational effects decision aid capabilities for Navy and Marine Corps war fighters in order to facilitate the characterization and prediction of the entire battle space.

Metric: Improve the accuracy of meteorological and oceanographic tactical decision aids and applications in order to address no less than 75% of applicable capability gaps and requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	WR	NRL:Washington, DC	3.893	-		-		-		-	0.000	3.893	
NITES/NITES-Next	WR	SSCs:California, South Carolina	7.323	1.350	Oct 2010	0.800	Oct 2011	-		0.800	0.000	9.473	
NITES/NITES-Next	Various	Various:Various	5.775	-		-		-		-	0.000	5.775	
NITES	Various	Various:Various	61.400	-		-		-		-	0.000	61.400	
NITES-Next	C/CPIF	GD-IT:Viginia	15.415	10.136	Nov 2010	7.387	Nov 2011	-		7.387	0.000	32.938	
NITES-Next	WR	NAVOCEANO:Mississippi	-	0.125	Oct 2010	0.125	Oct 2011	-		0.125	0.000	0.250	
<b>Subtotal</b>			93.806	11.611		8.312		-		8.312	0.000	113.729	

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Support Cost	C/CPIF	IPD:Various	0.595	-		-		-		-	0.000	0.595	
NITES-Next	C/FP	SAIC:Virgina	-	1.600	Nov 2010	0.950	Nov 2011	-		0.950	0.000	2.550	
NITES-Next	C/FP	NAVAIR:Maryland	-	0.125	Oct 2010	-		-		-	0.000	0.125	
<b>Subtotal</b>			0.595	1.725		0.950		-		0.950	0.000	3.270	

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Acquisition Workforce	Various	Various:Various	0.031	-		-		-		-	0.000	0.031	
NITES-Next	WR	SSC Pacific:San Diego, CA	-	-		-		-		-	0.000	0.000	
NITES-Next	C/FP	BAH:Virgina	-	0.400	Nov 2010	0.300	Nov 2011	-		0.300	0.000	0.700	
<b>Subtotal</b>			0.031	0.400		0.300		-		0.300	0.000	0.731	

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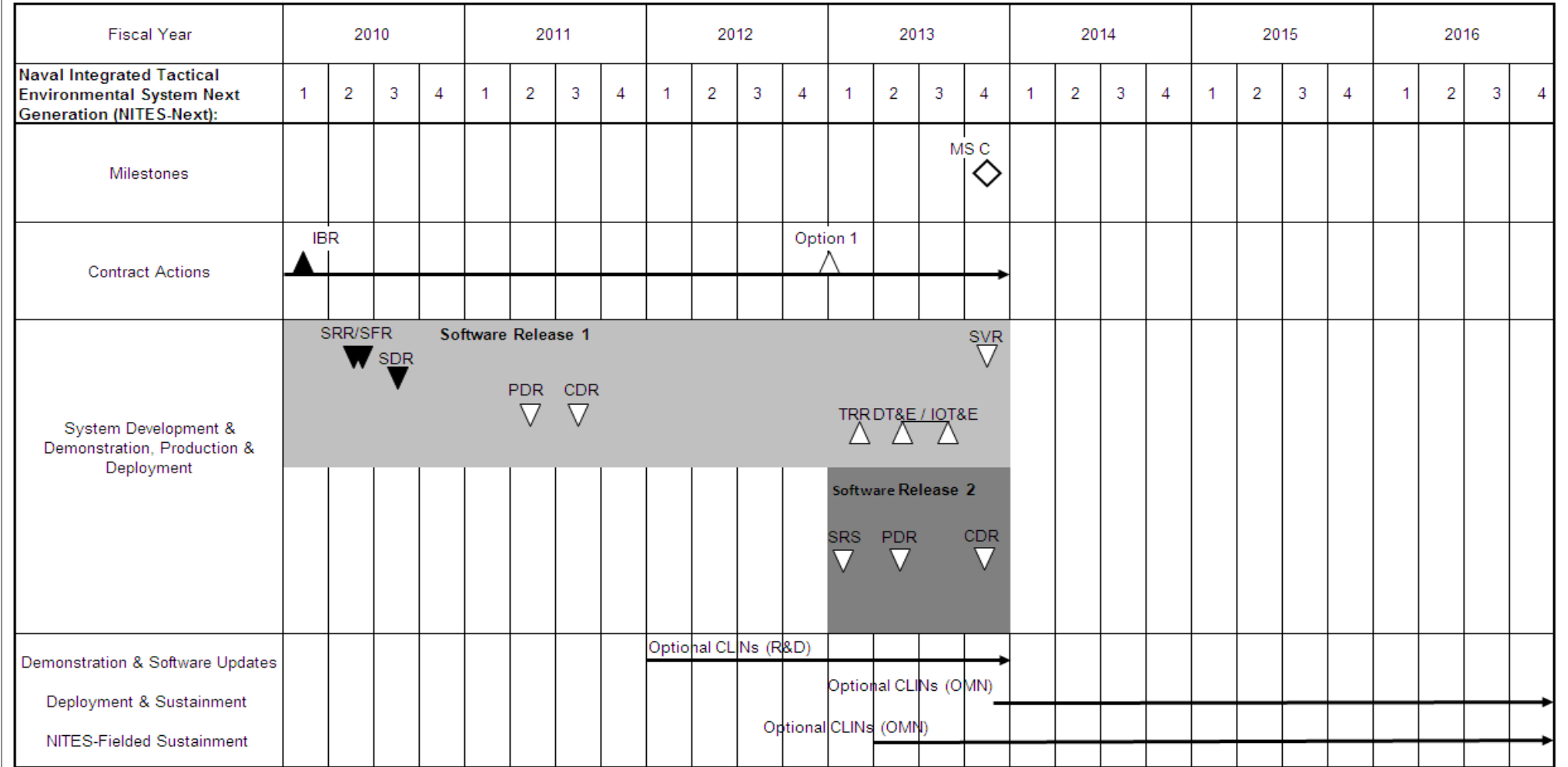
<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2012 Navy							<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>			<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>			
	<b>Total Prior Years Cost</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
<b>Project Cost Totals</b>	94.432	13.736	9.562	-	9.562	0.000	117.730		

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2343: <i>Tactical METOC Applications</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2343</b>				
NITES-Next Contract Actions	1	2010	4	2013
NITES-Next Initial Base Review (IBR)	1	2010	1	2010
NITES-Next Release 1: System Readiness Review (SRR) / SFR	2	2010	2	2010
NITES-Next Release 1: System Design Review (SDR)	3	2010	3	2010
NITES-Next Release 1: Production Design Review (PDR)	2	2011	2	2011
NITES-Next Release 1: Critical Design Review (CDR)	3	2011	3	2011
NITES-Next Contract Option 1	4	2012	1	2013
NITES-Next Release 1: Technical Readiness Review (TRR)	1	2013	1	2013
NITES-Next Release 2: SRS	1	2013	1	2013
NITES-Next Release 1: Development, Test, & Eval (DT&E) / IOT&E	2	2013	3	2013
NITES-Next Release 2: Production Design Review (PDR)	2	2013	2	2013
NITES-Next MS C	4	2013	4	2013
NITES-Next Release 1: SVR	4	2013	4	2013
NITES-Next Demo & Software Updates Optional CLINs (R&D)	1	2012	4	2013
NITES-Next Deployment & Sustainment Optional CLINs (OMN)	4	2013	4	2016
NITES-Fielded Sustainment Optional CLINs (OMN)	2	2013	4	2016
NITES-Next Release 2: Critical Design Review (CDR)	4	2013	4	2013

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>				<b>PROJECT</b> 2344: <i>Precise Timing and Astronomy</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2344: <i>Precise Timing and Astronomy</i>	2.216	2.118	1.025	-	1.025	1.043	1.014	1.023	0.982	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The major thrust of the Precise Timing and Astrometry Project is to provide future capabilities that directly support the mission of the U.S. Naval Observatory (USNO). These future mission capabilities are intended to:

- 1) address DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions (including objects at other than optical wavelengths) and the stellar inertial reference system (to which all navigation, guidance, and positioning systems are ultimately referred);
- 2) develop techniques for the prediction of the Earth's instantaneous orientation with respect to the stellar inertial reference system;
- 3) oversee the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks; and,
- 4) develop advanced electronic light detectors and interferometry in the optical and infrared wavelength regions for very precise determination of the positions of both faint and bright stars, satellite tracking, and space debris studies.

DoD Instruction 5000.2 assigns to the Navy the responsibility for coordinating Precise Time and Time Interval (PTTI) requirements and for maintaining a PTTI reference standard (astronomical and atomic) for use by all DoD Services, Federal agencies, and related scientific laboratories. The Navy is also responsible for providing astronomical data for navigation, positioning, and guidance, including space. Some operational and many emerging requirements surpass current support capabilities. In response to these DoD requirements, this project transitions Research (6.1) and Exploratory Development (6.2) efforts, as well as developments in the civilian sector, into the operational capabilities of the USNO.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> Precise Timing and Astronomy	2.216	2.118	1.025	-	1.025
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b> Completed fabrication of four Rubidium (Rb) Fountain systems; completed installation and testing of Alternate Fountain Master Clock environmental systems. Completed contract preparation and award for unique capabilities Global Positioning System (GPS) M Code Timing Receiver. Began development, installation and testing of electronic Very Long Base-Line Interferometry (eVLBI) wide-band data connectivity capability.					
<b>FY 2011 Plans:</b> Complete installation and operational testing of the complete Master Clock systems installation at U.S. Naval Observatory (USNO), DC. Continue development of and begin production of the GPS-III M-Code Timing					



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2344: <i>Precise Timing and Astronomy</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Receiver. Continue the development, installation and testing of electronic eVLBI wide-band data connectivity capability.					
<b><i>FY 2012 Base Plans:</i></b> Transport Rb Fountain Master Clock (MC) 5, 6 and 7 to the United States Naval Observatory (USNO) Alternate Master Clock (AMC) site. Demonstrate Initial Operating Capability (IOC) of the three Rb Fountain MC at the AMC. Conduct Operational Testing (OT) on the first production of GPS M-Code timing receiver. Complete Critical Design Review of software (SW) correlator on eVLBI for automated Earth Orientation Parameters and demonstrate SW correlator utilizing wide-band internet transmission of VLBI data from all VLBI sites.					
<b>Accomplishments/Planned Programs Subtotals</b>	2.216	2.118	1.025	-	1.025

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

N/A

**D. Acquisition Strategy**

Acquisition, management and contracting strategies are to support the Precise Timing and Astrometry Project in direct support of the U.S. Naval Observatory in:

- 1) addressing DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions and the stellar inertial reference system ;
- 2) developing techniques for the prediction of the Earth's instantaneous orientation with respect to the stellar inertial reference system;
- 3) overseeing the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks; and,
- 4) developing advanced electronic light detectors and interferometry in the optical and infrared wavelength regions for very precise determination of the positions of both faint and bright stars, satellite tracking, and space debris studies, all with management oversight by Program Executive Officer for Command, Control, Communications, Computers, and Intelligence.

**E. Performance Metrics**

Goal: Address Navy/DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions, oversee the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks.

Metric: Measurable progress toward stated GPS-III requirement to meet or exceed a 2 sigma accuracy of 0.5 nanoseconds (ns) for the M Code Rx error and 0.1ns Master Clock error. Improve star position accuracy to within 10 milliarcseconds in support of National Technical Means (classified) program requirements.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

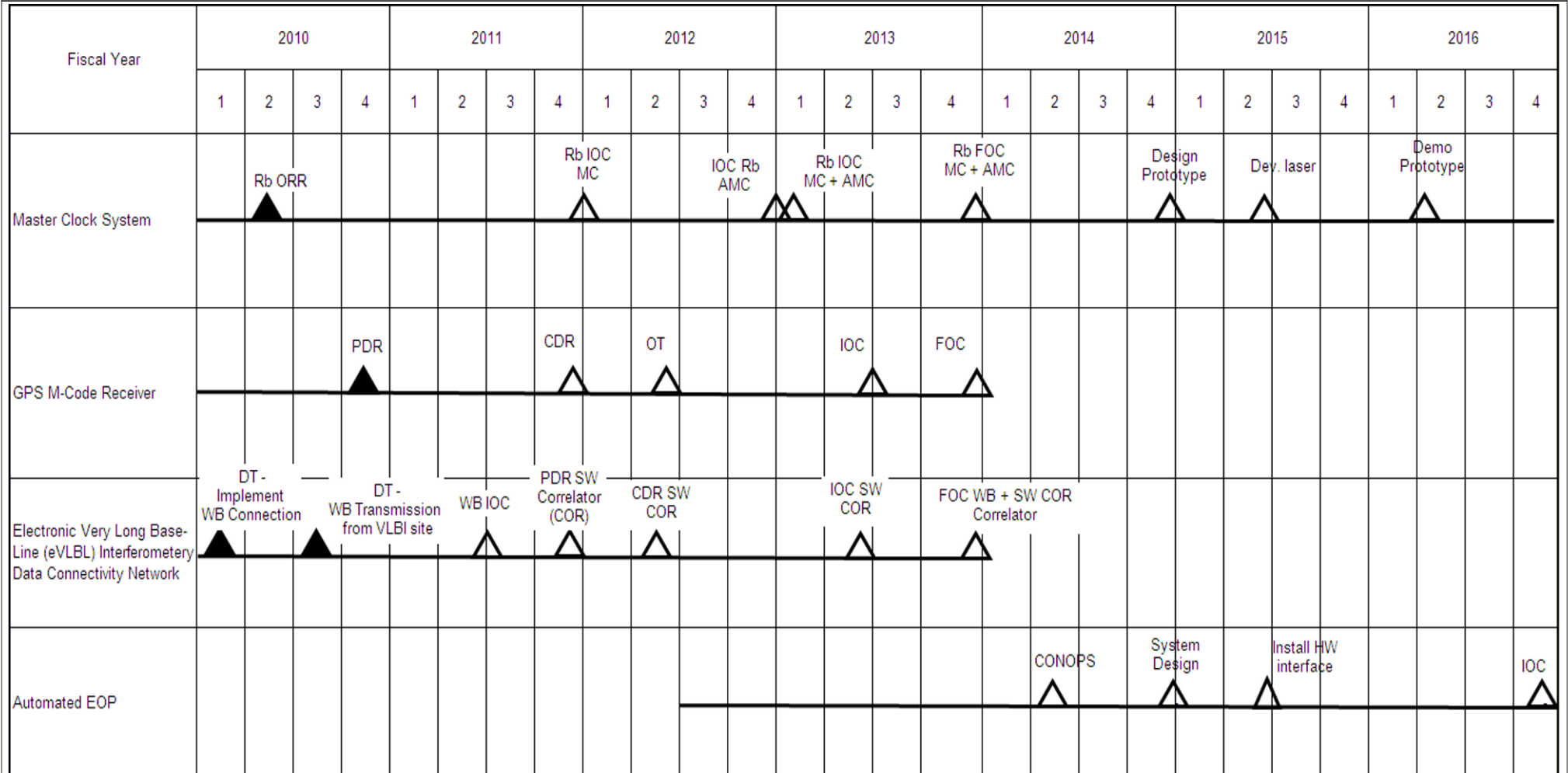
1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603207N: *Air/Ocean Tactical Applications*

**PROJECT**

2344: *Precise Timing and Astronomy*



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2344: <i>Precise Timing and Astronomy</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2344</b>				
Master Clock Sys	1	2010	4	2016
Master Clock Sys: Rb Operational Readiness Review (ORR)	2	2010	2	2010
Master Clock Sys: Rb Initial Operational Capability (IOC) - Milestone C (MC)	4	2011	1	2012
Master Clock Sys: IOC Rb Alternate Master Clock (AMC)	4	2012	1	2013
Master Clock Sys: Rb & AMC Initial Operational Capability (IOC) - MC	1	2013	1	2013
Master Clock Sys: Rb & AMC Full Operational Capability (FOC) - MC	4	2013	1	2014
Master Clock Sys: Design Prototype	4	2014	1	2015
Master Clock Sys: Develop Laser	2	2015	3	2015
Master Clock Sys: Demonstrate Prototype	2	2016	2	2016
GPS M-Code Receiver	1	2010	4	2013
GPS M-Code Receiver: Preliminary Design Review (PDR)	4	2010	4	2010
GPS M-Code Receiver: Critical Design Review (CDR)	4	2011	4	2011
GPS M-Code Receiver: OT	2	2012	2	2012
GPS M-Code Receiver: IOC	2	2013	3	2013
GPS M-Code Receiver: FOC	4	2013	1	2014
Electronic Very Long Base-Line (eVLBL) Interferometry Data Connectivity Network	1	2010	4	2013
eVLBL: DT - Implement Wide Band (WB) Connection	1	2010	1	2010
eVLBL: DT - WB Transmission from VLBI site	3	2010	3	2010
eVLBL: WB IOC	2	2011	3	2011
eVLBL: PDR Software (SW) Correlator (COR)	4	2011	4	2011
eVLBL: CDR SW Correlator	2	2012	2	2012

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 2344: <i>Precise Timing and Astronomy</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
eVLBL: IOC SW COR	2	2013	2	2013
eVLBL: FOC WB & SW COR	4	2013	4	2013
Automated Earth Orientation Parameters (EOP)	3	2012	4	2016
EOP: CONOPS	2	2014	2	2014
EOP: System Design	4	2014	1	2015
EOP: Install Hardware (HW) Interface	2	2015	2	2015
EOP: IOC	4	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3207: <i>Fleet Synthetic Training</i>	0.973	3.437	0.968	-	0.968	1.041	1.065	1.086	1.105	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Fleet Synthetic Training (FST) provides naval forces with an enhanced in-port training capability. Integrating embedded shipboard training devices, aircraft and submarine simulators into an interoperable network with joint, coalition and interagency partners will provide more effective training for our deploying naval forces.

A key factor in achieving this new way of training our naval forces is to ensure that the required training is based on realistic characterizations of the physical environment. This project develops and delivers software that characterizes the ocean and atmospheric environments; adjusts to meet fleet-required training scenarios; allows synthetic training to be conducted in areas of planned and contingency operations; and, provides sufficient detail to simulate the real-world conditions of the physical environment in those areas of interest.

To support Fleet readiness the Navy has established a persistent training environment. It enables the use of modeling and simulation in support of FST. Navy's Fleet Training Continuum (NCTE) satisfies this requirement by providing the infrastructure and connectivity required for distributed simulation-based training, events, and exercises. The JSAF simulation provides the core model for maritime constructive representation and stimulation for Navy Training and Joint Training events.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> Fleet Synthetic Training	0.973	3.437	0.968	-	0.968
<b>Articles:</b>	0	0	0		0
<b>Description:</b> Accomplishments planned include the stability and robustness improvements to support Fleet Synthetic Training. Improved capability of Automated Status Boards and Link 16 Information Display for the Tactical Training Group Schoolhouses. Improved capability of Class III and V Logistics, Theater Battle Management Core Systems mission support interface, and Intel fidelity (Electronic Intelligent (ELINT)) in support of Navy requirements. Improved capability in support of virtual and constructive users such as: Manned Flight Systems' H-60R and H-60S trainers.					
Accomplishments include development of meteorological and oceanographic environmental databases for total of 10 of 14 NCTE exercise areas. Conducted data and architecture testing between CNMOC data and the Environmental Data Cube Support system. Integrated environmental database hosting at the Naval Oceanographic Office. Developed capability to realistically simulate bathythermograph data collection based on synthetic ocean environment for total of 6 of 14 NCTE areas. Enhanced realism of training environment					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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<p>by providing synthetic satellite/radar imagery based on synthetic environmental data. Made improvements in generating acoustic performance products used by ASW white cell and ASW commander staff. Conducted verification and validation of acoustic performance products.</p> <p><b><i>FY 2010 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>- Develop environmental archive data for 4-6 additional NCTE exercise areas per NWDC specifications.</li> <li>- Test and evaluate link between claimancy data architecture and architecture for data provision in support of NCTE.</li> <li>- Develop GCCS-M overlays of performance surface products.</li> <li>- Implement ocean data query capability.</li> <li>- Continue to refine and automate the process for producing performance surface products as required.</li> <li>- Develop additional synthetic point data and field imagery products.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Develop environmental archive data for 4-6 additional NCTE exercises areas per NWDC specifications.</li> <li>- Refine link between claimancy data architecture and architecture for data provision in support of NCTE as required.</li> <li>- Continue to automate the process for producing performance surface products as required.</li> <li>- Develop additional synthetic point data and field imagery products.</li> <li>- Research feasibility of providing live data in support of synthetic training events.</li> <li>- Research implementation of climatology products into Fleet Synthetic Training.</li> <li>- Develop fleet-required capabilities and enhancements to the Navy Continuous Training Environment (NCTE) and Joint Semi-Automated Forces (JSAF) Navy software application baselines.</li> </ul> <p>Navy will further develop capabilities to address emerging threats, specifically in the areas of Strike Warfare, Ballistic Missile Defense and Information Operations. Without these funds, CSG and ESG Strike Warfare staffs will be unable to build required proficiencies for integrated Joint training events; Navy training systems will not share a common training environment due to lack of alignment between systems for common order of battle, electronic emitter data, and acoustic signature data; Emergent order of battle changes, blue force capabilities, and evolving TTPs will not be represented in FST, limiting the ability of the Tactical Training Groups, JWFC, and NWDC to provide a high-fidelity training environment. JSAF's ability to continue to increase scenario size in support of FST-O (Operational Level of War) will be curtailed, reducing training effectiveness. CSG and ESG</p>					
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>Intel staff will not build required proficiencies for Information Operations in integrated Joint training events Air Missile Defense: CSG and ESG forces will not be able to train to joint Ballistic Missile Defense (BMD) tasks.</p> <p>Additional research and development activities will focus on the Next Generation NCTE Network Architecture. Research and development of a new MSPP/MPLS architecture is a fundamental imperative to providing a seamless transition into the DISA backbone network beyond 2015. The development of the new MSPP/MPLS architecture cannot continue without the experienced and expert personnel to (a) develop cooperating networks integration strategies (GIG, JTEN, DMON) and (b) evaluate WAN industry trend analysis best practices.</p> <p>The Navy Training Baseline JSAF and other Virtual and Constructive components will be correlated with Live players, significantly upgrading common ground truth. Intensified terrain is required for every FST AOR, as the NCTE "world thin" terrain will contain areas of high definition for entities to transit through successfully, resulting in increased planning and developing of scenarios to support wargaming. Order of battle change implementation activities are enhanced reducing developer time; FST planners will be able to use the existing Link-16 model in the Navy Training Baseline JSAF and the supporting services in the NCTE to represent Link-11 platform operations; and FST events and Joint and COCOM wargames that require the use of unclass/ releasable JSAF can be supported, enhancing Live, Virtual and Constructive operations.</p> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Increase environmental data archive to 10 years.</li> <li>- Begin development of global ocean model data archive.</li> <li>- Research implementation of additional performance surface capabilities.</li> <li>- Begin implementation of climatology products into Fleet Synthetic Training.</li> <li>- Develop capability of providing live data in support of synthetic training events.</li> <li>- Develop new products in response to NWDC demand signal.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	0.973	3.437	0.968	-	0.968

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

**D. Acquisition Strategy**  
The included technology developments are primarily in-house with contractor participation through existing vehicles.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>

**E. Performance Metrics**

- 1) CNMOC will produce meteorological and oceanographic environmental databases for 4 or 14 NCTE exercise areas. Will implement, test, and integrate with JSAF and other federates in accordance with requirements.
- 2) CNMOC will complete data and architecture integration, including information assurance compliance for provision of synthetic METOC data to the NCTE.
- 3) CNMOC will produce bathythermographic data profiles based on synthetic ocean environment and synthetic satellite/ radar imagery based on meteorological environmental data for 4 of 14 NCTE exercise areas.
- 4) Navy Warfare Development Command (NWDC) will research and develop the software and associated efforts to include documentation; will design and implement upgrades to JSAF consistent with approved requirements and CRs and document the effects of JSAF capabilities (robustness) and stability. Will design, implement, test, and integrate JSAF enhancements in accordance with requirements. NWDC will deliver JSAF Version 5.0 that will include this newly developed software.
- 5) NWDC will produce a Next Generation Architecture that meets all DISA and Navy requirements. The architecture will include a Bill of Material (BOM) for the prototype equipment, and a transition plan for the 72+ nodes within the NCTE.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 3207</b>																												
Acquisition Milstones - Contract Award																												
Requirements - Fleet Training Software Users Group (FTSUG)																												
Requirement - Fleet Training Board of Directors (FTBoD)																												
Development - JSAF Update/Release																												
Development - JVLC FOM Update/Release																												
Development - Database Development																												
Development - Architecture																												
Development - Performance Surface Improvements																												
Development - Development Work																												
Development - Studies																												
Development - Configuration Management																												
Testing - FST Training Event																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3207: <i>Fleet Synthetic Training</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3207</b>				
Acquisition Milstones - Contract Award	1	2011	1	2011
Requirements - Fleet Training Software Users Group (FTSUG)	2	2010	2	2010
Requirement - Fleet Training Board of Directors (FTBoD)	1	2010	4	2010
Development - JSAF Update/Release	2	2011	2	2011
Development - JVLC FOM Update/Release	3	2011	3	2011
Development - Database Development	1	2010	1	2016
Development - Architecture	2	2010	2	2010
Development - Performance Surface Improvements	2	2010	1	2016
Development - Development Work	1	2010	1	2016
Development - Studies	4	2010	4	2016
Development - Configuration Management	2	2011	2	2016
Testing - FST Training Event	4	2011	4	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3229: <i>JMAPS</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3229: <i>JMAPS</i>	52.765	73.441	66.698	-	66.698	32.904	5.828	5.887	5.849	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Joint Milli-Arcsecond Pathfinder Survey (JMAPS) program. Joint strike operations require extremely accurate Positioning, Navigation, and Timing (PNT) systems in order to locate hostile threats with space-borne Intelligence Surveillance and Reconnaissance (ISR) systems, and then to deliver ordnance on precisely selected targets. The Navy provides a key component of PNT - the Celestial Reference Frame. This reference frame is defined in star catalogs that are used in conjunction with star trackers to determine orientation of space-based sensors to minimize target location accuracy and the resultant weapon system accuracy. The accuracy of star positions (hence ability to hit desired target) is degrading with time due to the movement of stars since the last highly accurate space-based measurements of star positions (order of 1 milli-arcsecond) were made in 1991. The accuracy of the catalog is approaching the minimum necessary to support current requirements, and will not meet future needs for high accuracy sensors and weapon systems. The JMAPS initiative will satisfy the emerging requirements for a new high accuracy star catalog through a space-based astrometry mission that will also "pathfind" new star tracker technology as a risk reduction for future ISR systems. Producing star catalogs with sufficient accuracy to meet these requirements can only be done from space platforms (satellites) due to atmospheric interference on ground-based systems and the physical limitations of high atmospheric aircraft.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> JMAPS	52.765	73.441	66.698	-	66.698
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b>					
Completed engineering analysis and conceptual design work required for the System Requirements Review including some risk reduction by maturing a single focal plane array and the astrometric and band pass filters. In addition, the program began the preliminary design activities for the instrument, spacecraft and ground systems.					
Phase A activities for the System Requirements Review included mission and system requirements analysis, engineering analysis of spacecraft attitude determination and control system and spacecraft design to include preliminary thermal requirements, and detailed system performance specifications from mission concept design and requirements definition. Technology risk reduction activities included the advanced development of low-noise focal plane arrays, as well as the astrometric and band pass filters.					
Phase B activities supported a Preliminary Design Review to include maturing the instrument, spacecraft and ground system design and the procurement of long-lead items. Procurement of the space bus, telescope and					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3229: <i>JMAPS</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>focal plane array were initiated. Additional engineering analysis was performed to evaluate the developing technologies for performance and mission satisfaction.</p> <p><b><i>FY 2011 Plans:</i></b> Complete Phase B with a Preliminary Design Review, including a mature instrument, spacecraft, and ground system design and begin the activities and engineering analysis required for the Critical Design Review. Milestone B will be conducted.</p> <p>Phase C activities include the completion of a detailed design for the instrument, spacecraft and ground system in support of a Critical Design Review and Milestone C. End to end performance analysis will be conducted to verify that the system and new technologies are sufficiently mature to satisfy mission requirements. Upon Milestone C approval, the program will begin Phase D by initiating the procurement of remaining sub-system and components of the instrument, spacecraft and ground system.</p> <p>FY 2011 Funding increase is associated with the continuation and increase in efforts associated with the space bus and various Naval Research Laboratory (NRL) integration efforts as well as the beginning of efforts for the sensor chip assembly.</p> <p><b><i>FY 2012 Base Plans:</i></b> Beginning in FY 2012 the spacecraft bus, telescope, and focal plane assembly will be delivered and integrated. Space vehicle integration testing as well as environmental testing will be performed. Test Readiness Review will be performed. Launch plans will be approved and launch preparations will commence.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	52.765	73.441	66.698	-	66.698

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

N/A

**D. Acquisition Strategy**

JMAPS was started as an S&T government activity. JMAPS is planned to transition to an ACAT II acquisition program at Milestone B. JMAPS is a one-of-a-kind space-based optical system based on the development of several ongoing S&T activities. Due to the unique expertise and desire to maintain a core capability of critical skills within the Navy's space system development workforce, JMAPS is an in-house government program executed through the Naval Research Laboratory (NRL) and The US Naval Observatory (USNO). Contract mechanisms at NRL and USNO by the Office of Naval Research with oversight by PEO Space Systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603207N: <i>Air/Ocean Tactical Applications</i>	3229: <i>JMAPS</i>

JMAPS will continue development and execution of the program in parallel with the efforts required to transition the program to an acquisition system by Milestone B in 2011.

**E. Performance Metrics**

The JMAPS program will update the currently degrading celestial catalog to meet current and future war fighter requirements. The JMAPS catalog will provide 1 milli-arcsecond position accuracy and 1 milli-arcsecond proper motion of the bright stars, magnitude 1 through 12, no later than 2017. The JMAPS program will provide photometric accuracy better than 7% in three wavelength bands from 450nm to 750nm.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3229: <i>JMAPS</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Integration of components	WR	Naval Research Laboratory:Washington, DC	-	32.152	Nov 2010	27.243	Nov 2011	-		27.243	Continuing	Continuing	Continuing
Space Bus/Satellite Materials	SS/CPFF	AeroAstro, Inc.:Ashburn, VA	-	29.359	Nov 2010	1.032	Dec 2011	-		1.032	Continuing	Continuing	Continuing
Optical Telescope	SS/CPFF	L3 Communications SSG:Tinsley, Wilmington, MA	-	0.474	Dec 2010	4.400	Jan 2012	-		4.400	0.000	4.874	4.500
Sensor Chip Assembly	SS/CPFF	Teledyne Scientific & Imaging (AKA Rockwell Intl.):Camarillo, CA	-	1.998	Dec 2011	4.000	Jan 2012	-		4.000	0.000	5.998	4.000
Technical Integration	C/CPFF	Orbital Science Corporation:Greenbelt, MD	-	0.800	Jan 2011	0.800	Jan 2012	-		0.800	Continuing	Continuing	Continuing
Engineering	SS/CPFF	Computational Physics:Springfield, VA	-	0.700	Jan 2011	0.625	Jan 2012	-		0.625	Continuing	Continuing	Continuing
Launch Vehicle	MIPR	Launch Vehicle Acquisition Office:Albuquerque, NM	-	-		21.265	Oct 2011	-		21.265	Continuing	Continuing	Continuing
Ground Systems Development	WR	United States Naval Observatory:Washington, DC	-	3.670	Nov 2010	3.248	Nov 2011	-		3.248	Continuing	Continuing	Continuing
Ground Systems Development	C/CPFF	CPI:Springfield, VA	-	2.090	Oct 2010	2.010	Oct 2011	-		2.010	Continuing	Continuing	Continuing
System Requirements Review (SRR)_10	Various	Various:Various	52.765	-		-		-		-	0.000	52.765	
<b>Subtotal</b>			52.765	71.243		64.623		-		64.623			

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 3229: <i>JMAPS</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3229</b>				
Pre-Phase A Development -- Milestone - A	2	2010	2	2010
Phase A Development -- Concept Development	1	2010	3	2010
Phase A Development -- System Requirements Review (SRR)	3	2010	3	2010
Phase A Development -- Capability Development Document (CDD) Development	2	2010	1	2011
Phase A Development -- Preliminary Design Review	1	2011	1	2011
Phase A Development -- Milestone - B	2	2011	2	2011
Phase B Development -- Milestone - C	2	2011	2	2011
Phase C Development -- Critical Design Review	3	2011	3	2011
Phase C Development -- Milestone - D	3	2011	3	2011
Phase D Build -- Bus Delivery	2	2012	2	2012
Phase D Build -- Space Vehicle Test Readiness Review (TRR)	4	2012	4	2012
Phase D Build -- Launch	3	2013	3	2013
Star Catalog Development -- Interim Catalog Delivery	4	2015	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603207N: <i>Air/Ocean Tactical Applications</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	1.394	-	-	-	-	-	-	-	-	0.000	1.394
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional adds.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Semi-Submersible UUV	1.394	-
<b>FY 2010 Accomplishments:</b> Continued the design and development efforts for a Semi-Submersible Unmanned Underwater Vehicle.		
<b>Congressional Adds Subtotals</b>	1.394	-

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

N/A

**D. Acquisition Strategy**

Congressional adds.

**E. Performance Metrics**

Congressional adds.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603216N: <i>Aviation Survivability</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	29.575	9.480	10.893	-	10.893	8.806	7.315	6.507	6.625	Continuing	Continuing
0584: <i>Acft Protective Clothing</i>	3.276	5.978	7.106	-	7.106	5.047	3.644	2.762	2.817	Continuing	Continuing
0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>	1.560	1.467	1.643	-	1.643	1.635	1.601	1.634	1.664	Continuing	Continuing
0592: <i>Acft &amp; Ordnance Safety</i>	1.598	1.393	1.417	-	1.417	1.401	1.363	1.390	1.413	Continuing	Continuing
1819: <i>CV Acft Fire Suppress System</i>	0.735	0.642	0.727	-	0.727	0.723	0.707	0.721	0.731	Continuing	Continuing
9999: <i>Congressional Adds</i>	22.406	-	-	-	-	-	-	-	-	0.000	22.406

**A. Mission Description and Budget Item Justification**

Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	27.291	9.480	11.704	-	11.704
Current President's Budget	29.575	9.480	10.893	-	10.893
Total Adjustments	2.284	-	-0.811	-	-0.811
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	2.410	-			
• SBIR/STTR Transfer	-0.028	-			
• Program Adjustments	-	-	-0.589	-	-0.589
• Section 219 Reprogramming	-0.098	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.222	-	-0.222

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

**Project:** 9999: *Congressional Adds*

<b>FY 2010</b>	<b>FY 2011</b>

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

	FY 2010	FY 2011
Congressional Add: <i>Head Attitude Tracking System</i>	1.593	-
Congressional Add: <i>Common Safety System Controller</i>	2.390	-
Congressional Add: <i>Conformal Ceramics for Enhanced Aviation Armor Systems</i>	2.490	-
Congressional Add: <i>Improved Capabilities for Irregular Warfare Platforms</i>	3.983	-
Congressional Add: <i>Integrated Manifold and Tube Ceramic Oxygen Generator</i>	4.780	-
Congressional Add: <i>Lighter-than-Air Stratospheric Unmanned Aerial Vehicle</i>	2.390	-
Congressional Add: <i>Military Upset Recovery Training</i>	0.797	-
Congressional Add: <i>Unmanned Aircraft Sys Optimization Tech Program</i>	2.390	-
Congressional Add: <i>Modular Advanced Helmet Visition System</i>	1.593	-
Congressional Add Subtotals for Project: 9999	22.406	-
Congressional Add Totals for all Projects	22.406	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: 0584 changes due to additional tasking added to Injury Prevention to include Traumatic Brain Injury to the head / neck model. Additional Advanced Helmet Vision System laboratory testing added to characterize tactical (fixed wing) system. 0591: A delay in the Technology Design and Development of the Rotary Wing Prototype Hardware effort has delayed the Technology Test and Evaluation of the Rotary Wing Ballistic and Signature testing.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0584: <i>Acft Protective Clothing</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0584: <i>Acft Protective Clothing</i>	3.276	5.978	7.106	-	7.106	5.047	3.644	2.762	2.817	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project 0584 develops, demonstrates, and validates technologies designed to enhance warfighter performance, protection, mission effectiveness, and survivability. The project addresses life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and control stations. Integrate and use alternative and new technologies for the Pilot Vehicle Integration, optimization of Intelligence Surveillance and Reconnaissance (ISR), and Forward Air Control-Air mission areas. Demonstrate innovative tools / approaches to improve situational awareness, new ISR technologies, and Graphical User Interfaces (new symbology and optimized logic for system employment). It responds to a number of operational requirements documents, including OR# 210-05-88 for Chemical and Biological protection, OR# 099-05-087 for Laser Eye Protection, and the joint Air Force/Navy (CAF-208-93) for an Aerospace Control Helmet Mounted Cueing System.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Advanced Technology Crew Station</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Integrated common symbology in open architecture into a common command and control station for Unmanned Air Vehicles. Developed and tested side facing seat and improved restraint system. Tested new side facing crashworthy troop seating on H-60 platform. Used Parachute Opening Shock Emulator and the biofidelic models to integrate results of injury prevention research into protective equipment design and testing to include helmet mounted devices and into ejection seat design for improved seat performance, retention, and safety.</p> <p><b>FY 2011 Plans:</b> Develop high resolution Ultra eXtended Graphics Array Charge Coupled Device day / night vision cameras. Begin safety of flight testing on a tactical platform. Migrate crashworthy seating designs to the fast attack boat community. Focus on shock and vibration work. Under Pilot Vehicle Interface draft experimental paradigm in collaboration with the Royal Netherlands Air Force to assess the relationship between scan patterns (e.g., eye movements) and information processing.</p> <p><b>FY 2012 Plans:</b> Expand capability of rotary system to accommodate tactical platforms, begin integration of high resolution 4 megapixel cameras. Begin collaborative experimental data collection with the Netherlands under the signed Memorandum of Agreement to determine optimal scan patterns. Studies will occur in both the United States and Netherlands Ministry of Defense simulators. Continue the development and testing of the smart controllers for cockpit and external airbag deployment.</p>	2.253 0	4.954 0	5.617 0
<b>Title:</b> Advanced Integrated Life Support System	1.023	1.024	1.489

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0584: <i>Acft Protective Clothing</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>	0	0	0
<p><b><i>FY 2010 Accomplishments:</i></b> Completed optical design to determine feasibility of integrating the Unity Magnification Goggle into the Advanced Helmet Mounted Display (HMD) system. Completed and demonstrated a split fixed wavelength design for helmet mounted displays. Goal was to provide multi wavelength protection while not impacting visibility of HMD symbology. Developed an aircraft personal air conditioning systems.</p> <p><b><i>FY 2011 Plans:</i></b> Complete and standardize fixed wavelength protective technologies to accommodate all substrates (spectacle, visor, goggle, step-in visor). Demonstrate protection in a visor and spectacle format. Finalize design for both man and aircraft mounted cooling system.</p> <p><b><i>FY 2012 Plans:</i></b> Develop prototype personal mounted cooling device for initial testing. Modify visor / spectacle laser protective technologies to include color balancing. Color balancing will improve cockpit compatibility by reducing spectral distortion.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	3.276	5.978	7.106

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

**D. Acquisition Strategy**  
Primary Hardware Development for the Navy Advanced Technology Crew Station efforts in FY11 will be performed under a Cost Plus Fixed Fee Indefinite Delivery Indefinite Quantity contract.

**E. Performance Metrics**  
Complete development of advanced crashworthy system level models, investigate improved visual search methodologies, and improve the ability to assess cockpit compatibility through new analytic approaches to anthropometry.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0584: <i>Acft Protective Clothing</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	C/CPFF	Gentex*:Simpson, PA*	4.735	2.951	Mar 2011	4.317	Jan 2012	-		4.317	0.000	12.003	12.003
Systems Engineering	WR	NAWCAD:Pax River MD	28.780	1.111	Dec 2010	1.090	Dec 2011	-		1.090	Continuing	Continuing	Continuing
Licenses	WR	NAWCAD:Pax River MD	0.900	0.185	Dec 2010	0.211	Dec 2011	-		0.211	Continuing	Continuing	Continuing
Prior Year Prod Dev no Longer Funded in Budget Year or Outyears	Various	Various:Various	13.900	-		-		-		-	0.000	13.900	
<b>Subtotal</b>			48.315	4.247		5.618		-		5.618			

**Remarks**

For Primary Hardware Development efforts in FY11 and beyond, Gentex is the performing activity while multiple vendors performed these efforts prior to FY11.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Configuration Management	WR	NAWCAD:Pax River MD	0.732	0.496	Dec 2010	0.596	Dec 2011	-		0.596	Continuing	Continuing	Continuing
Prior Year Support no Longer Funded in Budget Year or Outyears	Various	Various:Various	3.232	-		-		-		-	0.000	3.232	
<b>Subtotal</b>			3.964	0.496		0.596		-		0.596			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NAWCAD:Pax River MD	1.928	0.855	Dec 2010	0.502	Dec 2011	-		0.502	Continuing	Continuing	Continuing
	Various	Various:Various	18.240	-		-		-		-	0.000	18.240	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0584: <i>Acft Protective Clothing</i>
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<b>Acft Protective Clothing</b>	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>	Intensified Unity Mag Goggle																											
	Advanced Helmet Vision System (AHVS)																											
	Advanced Integrated Life Support Systems (AILSS)																											
	Injury Prevention																											
<b>Test &amp; Evaluation Milestones</b>	AHVS Laboratory Testing																											
	AHVS Safety of Flight Testing																											
	Advanced Technology Crew Station (ATCS)																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0584: <i>Acft Protective Clothing</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Acft Protective Clothing</i></b>				
Acquisition Milestones: Intensified Unity Mag Goggle	1	2010	2	2011
Acquisition Milestones: Advanced Helmet Vision System (AHVS)	1	2010	4	2016
Acquisition Milestones: Advanced Integrated Life Support Systems (AILSS)	1	2010	4	2016
Acquisition Milestones: Injury Prevention	1	2010	4	2013
Test & Evaluation Milestones: AHVS Laboratory Testing	1	2010	2	2014
Test & Evaluation Milestones: AHVS Safety of Flight Testing	1	2011	4	2015
Test & Evaluation Milestones: Advanced Technology Crew Station (ATCS)	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>	1.560	1.467	1.643	-	1.643	1.635	1.601	1.634	1.664	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Technology Requirements</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Updated program master plan based on trade studies to determine future technology requirements. Planned trade studies include acoustic and infrared signature reduction, rotary wing survivability requirements, fire protection technologies and threat systems analysis.</p> <p><b>FY 2011 Plans:</b> Update program master plan based on trade studies to determine future technology requirements. Planned trade studies include acoustic and infrared signature reduction, rotary wing survivability requirements, fire protection technologies, and threat systems analysis.</p> <p><b>FY 2012 Plans:</b> Update program master plan based on trade studies to determine future technology requirements. Planned trade studies include acoustic and infrared signature reduction, rotary wing survivability requirements, fire protection technologies, threat systems analysis, and biofuels impacts to survivability systems.</p>	0.272 0	0.251 0	0.278 0
<p><b>Title:</b> Technology Design &amp; Development</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Identified technology gaps between threat systems and platform signatures and research technology solutions. Developed prototype polymer coating for gearbox application to meet the ballistic 30-minute requirement.</p> <p><b>FY 2011 Plans:</b></p>	0.919 0	0.807 0	0.920 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>		<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Develop prototype materials to reduce acoustic/infrared footprint of operational platforms. Develop and demonstrate/validate production prototype of transparent armor canopy. Develop platform-specific gearbox polymer modifications. <b>FY 2012 Plans:</b> Develop prototype materials to reduce acoustic/infrared footprint of operational platforms. Develop and demonstrate/validate phase II prototype of transparent armor canopy and egress system. Develop platform-specific gearbox polymer modifications. Develop biofuels-compatible fuel bladders for testing.				
<b>Title:</b> Technology Test & Evaluation		0.369	0.409	0.445
		<b>Articles:</b> 0	0	0
<b>FY 2010 Accomplishments:</b> Evaluated alternative materials for design of the advanced survivable canopy. Received delivery of procured threat systems. Performed live fire testing with threat systems; updated threat system databases; evaluated threat systems against platforms. <b>FY 2011 Plans:</b> Flight test armored canopy. Perform live fire testing on platform specific gearbox polymer modifications. Perform live fire test on Green On Board Inert Gas Generation System prototype. <b>FY 2012 Plans:</b> Flight test armored canopy. Perform live fire testing on platform specific gearbox polymer modifications. Perform live fire test on biofuels-compatible fuel bladder.				
<b>Accomplishments/Planned Programs Subtotals</b>		1.560	1.467	1.643
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> Primary Hardware Development will be performed under either a Cost Plus Fixed Fee or a Firm Fixed Price contract.				
<b>E. Performance Metrics</b> Evaluate 100% of deployed/developmental USN/USMC aircraft platforms for survivability deficiencies using Navy gap analysis as baseline. Identify prototype hardware solutions to address 25% to 50% of deficiencies, and initiate a minimum of two new demonstration projects per year.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Bell Helicopter:Dallas, TX	1.661	0.646	Mar 2011	0.220	Mar 2012	-		0.220	0.000	2.527	2.714
Primary Hardware Development	Various	NAWCAD:Pax River, MD	9.696	-		0.256	Oct 2011	-		0.256	0.000	9.952	
Systems Engineering	Various	NAWCAD:Pax River, MD	10.075	0.465	Oct 2010	0.496	Oct 2011	-		0.496	Continuing	Continuing	Continuing
Systems Engineering	Allot	NAWCWD:China Lake, CA	-	-		0.050	Oct 2011	-		0.050	0.000	0.050	
Prior Year MgmtT&E no Longer Funded in Budget Year or Outyears	Various	Various:Various	4.770	-		-		-		-	0.000	4.770	
<b>Subtotal</b>			26.202	1.111		1.022		-		1.022			

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Support no Longer Funded in Budget Year or Outyears	Various	Various:Various	4.569	-		-		-		-	0.000	4.569	
<b>Subtotal</b>			4.569	-		-		-		-	0.000	4.569	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD:Pax River, MD	2.138	0.010	Mar 2011	0.115	Oct 2011	-		0.115	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	MIPR	Army Research Lab:Aberdeen, MD	0.393	0.164	Jun 2011	0.103	Mar 2012	-		0.103	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR		1.495	-		0.150	Oct 2011	-		0.150	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		NAWCWD:China Lake, CA											
Prior Year T&E no Longer Funded in Budget Year or Outyears	Various	Various:Various	0.348	-		-		-		-	0.000	0.348	
<b>Subtotal</b>			4.374	0.174		0.368		-		0.368			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD:Pax River, MD	0.838	0.041	Oct 2010	0.238	Oct 2011	-		0.238	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	JF Taylor:Lexington Park, MD	0.201	0.131	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Travel	PO	NAVAIR:Patuxent River, MD	0.314	0.010	Oct 2010	0.015	Dec 2011	-		0.015	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various	Various:Various	0.008	-		-		-		-	0.000	0.008	
<b>Subtotal</b>			1.361	0.182		0.253		-		0.253			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		36.506	1.467		1.643		-	1.643			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>
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Acft Survivability, Vulnerability & Safe	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Technology Requirements</b>								Survivability Master Plan Update 1								Survivability Master Plan Update 2								Survivability Master Plan Update 3								
	Asymmetric Threat Evaluations																															
<b>Technology Design &amp; Development</b>																																
	Rotary Wing Prototype Hardware																															
	Survivability Improvements																															
<b>Technology Test &amp; Evaluation</b>																																
	Rotary Wing Ballistic Testing																															
	Rotary Wing Signature Tests																															
	Prototype Hardware Tests																															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0591: <i>Acft Survivability, Vulnerability &amp; Safety</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Acft Survivability, Vulnerability &amp; Safe</i></b>				
Technology Requirements: Survivability Master Plan Update 1	4	2011	4	2011
Technology Requirements: Survivability Master Plan Update 2	4	2013	4	2013
Technology Requirements: Survivability Master Plan Update 3	4	2015	4	2015
Technology Requirements: Asymmetric Threat Evaluations	1	2010	4	2016
Technology Design & Development: Rotary Wing Prototype Hardware	1	2010	4	2012
Technology Design & Development: Survivability Improvements	1	2010	4	2016
Technology Test & Evaluation: Rotary Wing Ballistic Testing	1	2010	4	2012
Technology Test & Evaluation: Rotary Wing Signature Tests	1	2010	4	2012
Technology Test & Evaluation: Prototype Hardware Tests	1	2010	4	2015

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0592: <i>Acft &amp; Ordnance Safety</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0592: <i>Acft &amp; Ordnance Safety</i>	1.598	1.393	1.417	-	1.417	1.401	1.363	1.390	1.413	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Aircraft and Ordnance Safety Program transitions innovative munitions safety technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Insensitive Munitions	1.598	1.393	1.417
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
Conducted improved air-to-air missile demonstration and testing. Output: baseline Insensitive Munitions (IM) performance of 5-inch warhead for Fragment Impact mitigation and rocket motor technology for Air-to-Air applications. Conducted shock/blast barrier protection modeling/demonstration and testing.			
Demonstrated candidate materials as Sympathetic Detonation (SD) and impact barriers for weapon shipping containers. Investigated alternative mitigation materials. Output: design and modeling of layered material technology to mitigate bullet and fragment impact threats to High-Speed Anti-Radiation Missile container. Conducted initial evaluation of new pallet design for Mk 126 SD mitigation. Evaluated SD mitigation for Tomahawk in logistic phase.			
Demonstrated improved air-launched munitions. Began analysis, design, and demonstration of an improved Navy IM bomb that will mitigate SD and cook-off threats. Output: Evaluation of reactive liner as a SD mitigation for bombs (Mk 110 and 111).			
Developed and validated IM to advanced energetic material warheads and rocket motors, hyperbaric materials, new binding materials, novel fuses, and high energy density materials. Continued improved Navy IM bomb analysis/design/demonstration. Output: design/characterization of a high-output explosive with reduced shock sensitivity.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0592: <i>Acft &amp; Ordnance Safety</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Developed and validated IM solutions for advanced containment/case/warhead materials: metal matrix composite materials, high-temperature cases, reactive warheads, composite cases. Continued evaluating reactive material warheads for IM compliance. Output: design and initial proof of composite case design for large-diameter rocket motor (Tomahawk) IM mitigation.</p> <p><b>FY 2011 Plans:</b> Improve Air-to-Air Demonstration: The Sidewinder warhead evaluation will continue in direct support of PMA 259 FY14 planned transition. The Sidewinder Rocket motor technology evaluation will also continue in support of a potential PMA 259 FY14 transition. Initiate IM technology demonstration for 8-inch metal matrix rocket motor.</p> <p>Improve Air-Launched Weapons: Continue reactive liner evaluation in support of current transition efforts in bombs (BLU 110/111). Continue evaluation of affordable, high-performance, low shock sensitivity explosive for use with reactive liner and other potential applications. Initiate IM evaluation for Tomahawk tandem warhead.</p> <p>Advanced Containment/Case/Warhead Materials: Complete Tomahawk SD test/analysis in CNU-308 container. Continue pallet design/demonstration for BLU-126. Continue Tomahawk composite case Mk 135 design/demonstration.</p> <p>Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Continue Advanced Anti-Radiation Guided Missile (AARGM) container design/demonstration for PMA 242 planned transition (FY11 focus on modeling/design based on FY10 baseline testing).</p> <p><b>FY 2012 Plans:</b> Improve Air-to-Air Demonstration: Continue Sidewinder warhead/rocket motor evaluation in direct support of PMA 259 FY14 planned transition. Continue IM technology demonstration for 8-inch metal matrix rocket motor.</p> <p>Improve Air-Launched Weapons: Continue reactive liner evaluation in support of current transition efforts in bombs (BLU 110/111). Continue IM evaluation for Tomahawk tandem warhead. Initiate minimum smoke propellant demonstration for rockets (transition out of Joint Service IM Technology Program).</p> <p>Advanced Containment/Case/Warhead Materials: Continue Tomahawk composite case Mk 135 design/demo. Initiate IM evaluation of new Mk 135 propellant in composite case.</p> <p>Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Continue AARGM container design/demonstration for PMA 242 planned transition (finalize design/initiate IM testing). Initiate shape charge jet test/evaluation for NAVAIR priority IM weapons.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.598	1.393	1.417

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0592: <i>Acft &amp; Ordnance Safety</i>

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

N/A

**D. Acquisition Strategy**

Not applicable.

**E. Performance Metrics**

The Aircraft and Ordnance Safety program will initiate six to nine technology development/maturation efforts to improve Insensitive Munitions signature and will work to transition those technologies to weapons programs. The weapons programs will be chosen based on PEO(U&W) weapons portfolio and will focus on the priority weapons as defined in the 2011/2012 Insensitive Munitions strategic plan.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0592: <i>Acft &amp; Ordnance Safety</i>
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<b>Acft &amp; Ordnance Safety</b>	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
	Air-to-Air Missile Demonstration/Testing																															
	Improved Air-Launched Weapons																															
	Advanced Containment/Case/Warhead Materials																															
	Shock/Blast Barrier Protection Modeling Demonstration/Testing																															
	Advanced Energetic Materials																															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 0592: <i>Acft &amp; Ordnance Safety</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Acft &amp; Ordnance Safety</b>				
Air-to-Air Missile Demonstration/Testing	1	2010	4	2016
Improved Air-Launched Weapons	1	2010	4	2016
Advanced Containment/Case/Warhead Materials	1	2010	4	2016
Shock/Blast Barrier Protection Modeling Demonstration/Testing	1	2010	4	2016
Advanced Energetic Materials	1	2010	4	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 1819: <i>CV Acft Fire Suppress System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1819: <i>CV Acft Fire Suppress System</i>	0.735	0.642	0.727	-	0.727	0.723	0.707	0.721	0.731	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project develops improved fire-fighting systems and fire protective measures for aircraft-related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire-fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire-fighter training improvements.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Fire-Fighting	0.735	0.642	0.727
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Completed final testing of Halon 1211 commercial off-the-shelf replacement agent flight line extinguisher testing. Finalized high-occupancy/rolled helicopter rescue procedures. Conducted evaluation of high-durability aluminization material for proximity fire-fighting. Developed and initiated evaluation of next generation of proximity suits to address wear in crotch areas. Conducted testing of portable powered emergency external aircraft canopy opening devices on additional model carrier aircraft. Authored standardized procedures for mitigation of carrier main deck fuel station fires. Authored draft standardized procedures for mitigation of carrier gallery deck fuel station fires. Authored amphibious hangar bay conflagration self-contained breathing apparatus concept of operations. Provided subject matter expert support to the Aircraft Fire Fighting NATOPS (80R-14) model manager during the upcoming 80R-14 NATOPS Rewrite Conference. Initiated development of procedures and hardware for cooling of Joint Strike Fighter (JSF) internally carried ordnance.			
<b>FY 2011 Plans:</b> Test hardware for cooling of JSF internally carried ordnance. Finalize procedures for cooling of JSF internally carried ordnance. Evaluate adequacy of current procedures for handling aircraft composite fires with consideration of new-generation aircraft composites. Evaluate the feasibility/need for a flash hood with composite filtering capability. Author necessary revisions/additions to the Aircraft Fire-Fighting NATOPS and submit for consideration. Provide subject matter expert support to the Aircraft Fire Fighting NATOPS (80R-14) model manager during the upcoming 80R-14 NATOPS Rewrite Conference. Initiate development Aqueous Film-Forming Foam (AFFF) application nozzle and procedures for Electromagnetic Aircraft Launch System (EMALS).			
<b>FY 2012 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 1819: <i>CV Acft Fire Suppress System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continue to test hardware for cooling of JSF internally carried ordnance. Continue development AFFF application nozzle and procedures for of EMALS. Finalize procedures for cooling of JSF internally carried ordnance. Provide subject matter expert support to the Aircraft Fire Fighting NATOPS (80R-14) model manager during the upcoming 80R-14 NATOPS Rewrite Conference. Evaluate the effectiveness of and economies afforded by intermittent weapons cooling streams (vice constant). Continue participation in development/testing of new environmentally friendly AFFF concentrates.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.735	0.642	0.727

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

N/A

**D. Acquisition Strategy**

Not applicable.

**E. Performance Metrics**

The Carrier Aircraft Fire Suppression (CAFS) program will, at a minimum, fund 6 to 10 projects per year that investigate and evaluate tactical capability gaps and potential capability improvements regarding shipboard aircraft fire suppression doctrine and equipment. CAFS projects will have a greater than 90% success rate of insertion into DON shipboard aircraft fire-fighting procedures and documentation.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	22.406	-	-	-	-	-	-	-	-	0.000	22.406
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Head Attitude Tracking System <i>FY 2010 Accomplishments:</i> The funds supports development of a Head Attitude Tracking System.	1.593	-
<b>Congressional Add:</b> Common Safety System Controller <i>FY 2010 Accomplishments:</i> This is a sensor system that will control airbag deployment in the cockpit and on the exterior of rotary wing platforms. Unlike automobile airbag controllers, this will be predictive rather than just solely reactive to achieve required response / activation times.	2.390	-
<b>Congressional Add:</b> Conformal Ceramics for Enhanced Aviation Armor Systems <i>FY 2010 Accomplishments:</i> New aircraft and personnel armor system for the warfighter. The approach provided lightweight, conformal aircraft and personnel armor using a new process for developing materials with unique ceramic properties.	2.490	-
<b>Congressional Add:</b> Improved Capabilities for Irregular Warfare Platforms <i>FY 2010 Accomplishments:</i> This effort integrated the new common operational picture and emerging situational awareness technologies. Funding supported mission relevant exercises to empirically assess these technologies.	3.983	-
<b>Congressional Add:</b> Integrated Manifold and Tube Ceramic Oxygen Generator <i>FY 2010 Accomplishments:</i> This is a continuation of an earlier add to develop a passive, high purity oxygen generating system to replace the current on board liquid oxygen system.	4.780	-
<b>Congressional Add:</b> Lighter-than-Air Stratospheric Unmanned Aerial Vehicle	2.390	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603216N: <i>Aviation Survivability</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b><i>FY 2010 Accomplishments:</i></b> Developed a lighter than air, unmanned air vehicle that will fly at 85K feet for 3 to 4 months to provide low cost, persistent surveillance with high bandwidth over the horizon communication capability.		
<b><i>Congressional Add:</i></b> Military Upset Recovery Training	0.797	-
<b><i>FY 2010 Accomplishments:</i></b> Conducted operational testing and further analysis of an In-Flight Simulation based training program, which will support advance of training critical piloting skills in the regime of upset recovery. The initial funding allowed the In-Flight Simulator to be programmed to exhibit representative characteristics to include relatively heavy control forces and sluggish response so as to illustrate the inherent difficulty in recovering from jet upsets in this class of aircraft and to conduct initial evaluations to measure pilot performance and recovery quality.		
<b><i>Congressional Add:</i></b> Unmanned Aircraft Sys Optimization Tech Program	2.390	-
<b><i>FY 2010 Accomplishments:</i></b> Continued development of next generation systems for Swarming control unmanned vehicle systems.		
<b><i>Congressional Add:</i></b> Modular Advanced Helmet Visition System	1.593	-
<b><i>FY 2010 Accomplishments:</i></b> The Modular Advanced Helmet Vision Systems (MAHVS) provided significantly improved impact, hearing, laser eye, and chem-bio protection, along with communications and oxygen delivery, in a versatile, low-cost, mission reconfigurable design.		
<b>Congressional Adds Subtotals</b>	22.406	-

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

**D. Acquisition Strategy**  
Not required for Congressional Adds

**E. Performance Metrics**  
Not required for Congressional Adds

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	8.644	4.275	3.702	-	3.702	3.818	3.405	3.525	3.653	Continuing	Continuing
3050: <i>Deployable JT Command and Control</i>	5.617	4.275	3.702	-	3.702	3.818	3.405	3.525	3.653	Continuing	Continuing
9999: <i>Congressional Adds</i>	3.027	-	-	-	-	-	-	-	-	0.000	3.027

**A. Mission Description and Budget Item Justification**

Deployable Joint Command and Control (DJC2) is a Secretary of Defense (SecDef) and Chairman, Joint Chiefs of Staff (CJCS) priority DoD transformation initiative that is providing a standardized, integrated, rapidly deployable, modular, scalable, and reconfigurable joint command and control capability to designated Geographic Combatant Commands (GCCs). DJC2 is the material solution to Defense Planning Guidance (DPG) that called for the development of Standing Joint Task Forces (JTFs) with a deployable Command and Control (C2) capability. DJC2 will ensure that Joint Force Commanders (JFCs) 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 program addresses both the Quadrennial Defense Review finding that a joint command and control architecture needs to be developed for standing JTFs at each of the GCCs and the need for a deployable Joint Command and Control System described in the Transformation Study Report presented to the Secretary of Defense. DJC2 is supported by SecDef and CJCS.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	9.034	4.275	6.678	-	6.678
Current President's Budget	8.644	4.275	3.702	-	3.702
Total Adjustments	-0.390	-	-2.976	-	-2.976
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.281	-			
• Program Adjustments	-	-	-2.598	-	-2.598
• Section 219 Reprogramming	-0.109	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.378	-	-0.378

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 9999: *Congressional Adds*

Congressional Add: *Deployable Command and Control Vehicle*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	3.027	-
	3.027	-
	3.027	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3050: <i>Deployable JT Command and Control</i>	5.617	4.275	3.702	-	3.702	3.818	3.405	3.525	3.653	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Deployable Joint Command and Control (DJC2) is a Secretary of Defense (SECDEF) and Chairman, Joint Chiefs of Staff (CJCS) priority DoD transformation initiative that is providing a standardized, integrated, rapidly deployable, modular, scalable, and reconfigurable joint command and control capability to designated Geographic Combatant Commands (GCCs). DJC2 is the material solution to Defense Planning Guidance (DPG) that called for the development of Standing Joint Task Forces (JTFs) with a deployable Command and Control (C2) capability. DJC2 will ensure that Joint Force Commanders (JFCs) 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 program addresses both the Quadrennial Defense Review finding that a joint command and control architecture needs to be developed for standing JTFs at each of the GCCs and the need for a deployable Joint Command and Control System described in the Transformation Study Report presented to the Secretary of Defense. DJC2 is supported by SecDef and CJCS.

DJC2 seeks to provide standing, and standardized, joint C2 systems that can be deployed by Regional Combatant Commanders (RCCs) or JTFs and the new Standing Joint Force Headquarters concept and doctrine being developed by Joint Forces Command in coordination with other RCCs and the Joint Staff, as tasked by DPG. RCC and JTF commanders will use a deployable joint command and control capability for day-to-day operations, as well as when deployed for training or contingency operations. The capability is intended for all levels of conflict and will be reconfigurable to meet specific RCC and JTF mission requirements. This capability must be interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

DJC2 will utilize Global Command and Control System in its core suite of applications, ensuring interoperability with the worldwide-installed base of Global Command and Control System - Joint.

FY12 funds development of efforts for systems engineering and integration, and DJC2 Test Bed.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Systems Engineering & Integration	1.991	1.823	1.899
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
Identified emerging/mandated Key Information Profiles (KIP) migration and impacts to Deployable Joint Command and Control (DJC2). Singled out improvement in infrastructure equipment to include power generation, soft shelter design and video			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>		<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				<b>FY 2010</b>
distribution for design modification. Evaluated Ka Band Super High Frequency radio upgrades to both Early Entry communication package and Rapid Response Kits. Conducted design reviews to reflect outcome of the trade studies/experimentation.				
<b>FY 2011 Plans:</b> Continue to identify and incorporate emerging/mandated Key Information Profiles (KIP) required by the Deployable Joint Command and Control (DJC2) Net-Ready Key Performance Parameter (KPP) into system design. Update Information Support Plan to reflect system architecture changes and obtain CJCS J6/J2 approval. With validated architecture, obtain renewal of the DJC2 Core System Authority to Operate (ATO) and perform required testing and information assurance mitigation to support ATO approval. Investigate potential hybrid power solutions for diesel generator replacement.				
<b>FY 2012 Plans:</b> Continue to identify and incorporate emerging/mandated Key Information Profiles required by the DJC2 Net Ready KPP into system design. Obtain prototype equipment and conduct trades studies per the system engineering guidelines. Conduct Critical Design Reviews for upgrade plan upon design approval, prepare the mandatory Engineering Change Proposals, and identify testing, training, and sparing requirements. Construct, integrate and test an alternative power scheme.				
<b>Title:</b> DJC2 RDT&E Test Bed				3.140
				2.452
				1.803
<b>Articles:</b>				0
				0
				0
<b>FY 2010 Accomplishments:</b> Updated the DJC2 Test Bed to facilitate testing of new hardware necessary to support trade studies and design reviews for infrastructure and communications refresh. Applied lessons learned from fielded and like systems to assist in driving the revitalized design.				
<b>FY 2011 Plans:</b> Complete final testing of revised DJC2 Network System Design. Incorporate fixes to the Network System and validate through regression testing to support fielding decisions by the Program Office. Finalize and test the DJC2 Virtual Machine and Portal Synchronization tool to include server procurement, network support and testing thereby providing the ability to push updated virtual machines and command and control portals to any given DJC2 from either garrison location or the DJC2 Operational Support Center, significantly improving mission tailorability. Conduct trade studies to identify the next generation client for DJC2.				
<b>FY 2012 Plans:</b> Continue to incorporate fixes to the Network System and validate through regression testing to support fielding decisions by the Program Office. Conduct trade studies to identify the next generation client for DJC2. Identify and incorporate changes to the DJC2 test bed based on lessons learned from fielded systems and operational world events.				
<b>Title:</b> CONOPS Experimentation System				0.486
				-
				-



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>	0		
<b><i>FY 2010 Accomplishments:</i></b> Continued component upgrades for CONOPS System at JFCOM.			
<b>Accomplishments/Planned Programs Subtotals</b>	5.617	4.275	3.702

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN /2804: <i>DJC2</i>	11.165	8.542	8.994	0.000	8.994	9.255	3.546	3.731	3.857	Continuing	Continuing

**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 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.

**E. Performance Metrics**

The 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 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering	WR	NSWC:PCD	44.301	1.510	Nov 2010	1.544	Nov 2011	-		1.544	Continuing	Continuing	Continuing
Engineering Facility Development	WR	NSWC:PCD	32.403	1.746	Feb 2011	1.428	Mar 2012	-		1.428	Continuing	Continuing	Continuing
Hardware Development	MIPR	USA:VA	20.012	-		-		-		-	0.000	20.012	
<b>Subtotal</b>			96.716	3.256		2.972		-		2.972			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Software Integration	WR	NSWC:PCD	39.451	0.313	Nov 2010	0.355	Nov 2011	-		0.355	Continuing	Continuing	Continuing
Technical Investigations	MIPR	MISC:VA	13.426	-		-		-		-	0.000	13.426	
Trade-off Studies & Analyses	MIPR	MISC:VA	9.000	-		-		-		-	0.000	9.000	
<b>Subtotal</b>			61.877	0.313		0.355		-		0.355			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NSWC:PCD	9.925	0.321	Feb 2011	0.179	Feb 2012	-		0.179	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	NSWC:PCD	10.956	0.385	Feb 2011	0.196	Feb 2012	-		0.196	Continuing	Continuing	Continuing
Test Assets	MIPR	MISC:MISC	4.000	-		-		-		-	0.000	4.000	
<b>Subtotal</b>			24.881	0.706		0.375		-		0.375			



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>Acquisition Milestones</b>																												
MILESTONE C																												
IOC																												
FDDR																												
<b>Test &amp; Evaluation Milestones</b>																												
Development Test																												
Operational Test			△			△				△				△					△						△			
			D/OT			D/OT				D/OT				D/OT					D/OT					D/OT				
<b>Production Milestones</b>																												
Deliveries																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 3050: <i>Deployable JT Command and Control</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3050</b>				
DEVELOPMENTAL TESTb	3	2010	3	2010
DEVELOPMENTAL TESTc	3	2011	3	2011
DEVELOPMENTAL TESTd	3	2012	3	2012
DEVELOPMENTAL TESTe	3	2013	3	2013
DEVELOPMENTAL TESTf	3	2014	3	2014
DEVELOPMENTAL TESTg	3	2015	3	2015
DEVELOPMENTAL TEST	3	2016	3	2016
OPERATIONAL TESTb	3	2010	3	2010
OPERATIONAL TESTc	3	2011	3	2011
OPERATIONAL TESTd	3	2012	3	2012
OPERATIONAL TESTe	3	2013	3	2013
OPERATIONAL TESTf	3	2014	3	2014
OPERATIONAL TESTg	3	2015	3	2015
OPERATIONAL TEST	3	2016	3	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603237N: <i>Deployable JT Cmd &amp; Control</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	3.027	-	-	-	-	-	-	-	-	0.000	3.027
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional add

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

<b><i>Congressional Add:</i></b> Deployable Command and Control Vehicle	FY 2010	FY 2011
	3.027	-
<b><i>FY 2010 Accomplishments:</i></b> Continued system engineering, integration and testing activities for U.S. Northern Command Deployable Command and Control Vehicle variant.		
<b>Congressional Adds Subtotals</b>	3.027	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional add

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603251N: <i>Aircraft Systems</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	10.497	-	10.497	4.648	2.951	-	-	0.000	18.096
3331: <i>C-2 System Development</i>	-	-	10.497	-	10.497	4.648	2.951	-	-	0.000	18.096

**Note**

This program element is a new start in FY 2012.

**A. Mission Description and Budget Item Justification**

This program element supports the study, evaluation, and optimization of fielded aircraft systems not supported by a system specific RDTE program element. As naval aircraft systems age, an analysis of programmatic and/or reliability enhancement options allows the Department of the Navy to more effectively understand and manage system lifecycle costs and implications. The studies funded will provide a basis upon to recommend options for improved efficiency, minimization of life cycle cost, or other programmatic options.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	10.497	-	10.497
Total Adjustments	-	-	10.497	-	10.497
• Congressional General Reductions					
• Congressional Directed Reductions					
• Congressional Rescissions	-	-			
• Congressional Adds					
• Congressional Directed Transfers					
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	10.584	-	10.584
• Rate/Misc Adjustments	-	-	-0.087	-	-0.087

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3331: <i>C-2 System Development</i>	-	-	10.497	-	10.497	4.648	2.951	-	-	0.000	18.096
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

This project is a new start in FY 2012.

**A. Mission Description and Budget Item Justification**

The C-2A Greyhound is a high wing monoplane, twin engine turbo-prop aircraft capable of operating from both a shore base and all operational United States Navy aircraft carrier classes. The mission of the C-2A is to provide rapid response Carrier Onboard Delivery of fleet essential supplies, repair parts, and personnel to sustain at sea operations of deployed battle groups. In addition, the C-2A provides airdrop delivery and mobilization support for special operations forces from land bases and carriers, Search and Rescue, and Humanitarian Relief.

This project will fund required development, analysis, and testing of a Critical Brake Upgrade to correct a deficiency related to the operational ground controllability of the C-2A.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Critical Brake Upgrade	-	-	10.497
<b>Articles:</b>			0
<b>Description:</b> Provides funding for development, design, integration and test of an anti-skid brake system for the C-2A aircraft. This will correct a deficiency related to the operational ground controllability of the C-2A.			
<b>FY 2012 Plans:</b> Provides funding for development, design, integration and test of an anti-skid brake system for the C-2A aircraft.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	10.497



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN/0556: <i>C-2A(R) Series Modification (Includes OSIP 007-14 Critical Brake Upgrade)</i>	0.000	0.000	0.000	0.000	0.000	0.000	3.600	3.500	3.320	7.990	18.410

**D. Acquisition Strategy**

The C-2 Operational Ground Controllability strategy will be exercised under an Engineering Change Proposal.

**E. Performance Metrics**

Validation is planned for second quarter FY13. Verification is planned for first quarter FY14. Final TD is planned for first quarter FY15.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD:TBD	-	-		3.816	May 2012	-		3.816	2.656	6.472	6.472
Systems Engineering	Various	Various:Various	-	-		0.375	Nov 2011	-		0.375	0.000	0.375	
<b>Subtotal</b>			-	-		4.191		-		4.191	2.656	6.847	

**Remarks**

Totals may not add due to rounding.

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	TBD	TBD:TBD	-	-		2.232	Nov 2011	-		2.232	0.558	2.790	2.790
Integrated Logistics Support	WR	North Island:North Island, CA	-	-		0.247	Nov 2011	-		0.247	0.507	0.754	
Configuration Management	WR	North Island:North Island, CA	-	-		0.025	Nov 2011	-		0.025	0.051	0.076	
Technical Data	WR	North Island:North Island, CA	-	-		0.484	Nov 2011	-		0.484	0.600	1.084	
Maintenance Planning	WR	North Island:North Island, CA	-	-		0.280	Nov 2011	-		0.280	0.280	0.560	
Government Engineering Support	WR	NAWCAD:Pax River, MD	-	-		1.258	Nov 2011	-		1.258	0.293	1.551	
Government Engineering Support	WR	North Island:North Island, CA	-	-		0.950	Nov 2011	-		0.950	0.328	1.278	
ETS - Contractor Engineering Support	C/CPFF	Various:Various	-	-		0.450	Dec 2011	-		0.450	0.000	0.450	0.450
<b>Subtotal</b>			-	-		5.926		-		5.926	2.617	8.543	

**Remarks**

Totals may not add due to rounding.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD:Pax River, MD	-	-		-		-		-	0.578	0.578	
Operational Test & Evaluation	WR	NAWCAD:Pax River, MD	-	-		-		-		-	0.770	0.770	
Test Assets	WR	NAWCAD:Pax River, MD	-	-		-		-		-	0.400	0.400	
<b>Subtotal</b>			-	-		-		-		-	1.748	1.748	

**Remarks**  
Totals may not add due to rounding.

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support - MSS	C/CPFF	Various:Various	-	-		0.125	Dec 2011	-		0.125	0.188	0.313	0.313
Government Engineering Support	WR	NAWCAD:Pax River, MD	-	-		0.061	Nov 2011	-		0.061	0.117	0.178	
Government Engineering Support	WR	North Island:North Island, CA	-	-		0.019	Nov 2011	-		0.019	0.021	0.040	
Program Management Support	WR	NAWCAD:Pax River, MD	-	-		0.097	Nov 2011	-		0.097	0.166	0.263	
Program Management Support	WR	North Island:North Island, CA	-	-		0.028	Nov 2011	-		0.028	0.034	0.062	
Travel	Various	Various:Various	-	-		0.050	Oct 2011	-		0.050	0.050	0.100	
<b>Subtotal</b>			-	-		0.380		-		0.380	0.576	0.956	

**Remarks**  
Totals may not add due to rounding.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>
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	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	-	10.497	-	10.497	7.597	18.094	

**Remarks**  
Totals may not add due to rounding.



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603251N: <i>Aircraft Systems</i>	<b>PROJECT</b> 3331: <i>C-2 System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-2 System Development</b>				
Systems Development: Hardware Development: Engineering & Manufacturing Development	2	2012	2	2014
Systems Development: Hardware Development: Validation	2	2013	2	2013
Systems Development: Hardware Development: Verification Install	1	2014	1	2014
Systems Development: Hardware Development: Drawings/Technical Data Development	4	2012	4	2014
Systems Development: Hardware Development: Maintenance Planning	4	2013	4	2014
Systems Development: Hardware Development: Technical Manual Development	2	2014	4	2014
Systems Development: Reviews: Preliminary Design Review/System Functional Review	1	2013	1	2013
Systems Development: Reviews: Critical Design Review	4	2013	4	2013
Systems Development: Reviews: Funtional Readiness Review/Test Readiness Review	2	2014	2	2014
Systems Development: Reviews: Technical Directive	1	2015	1	2015
Test & Evaluation: Technical Evaluation: Developmental Planning & Test	4	2013	1	2015
Deliveries: Production Deliveries - APN (6 Kits)	2	2014	2	2014
Deliveries: Production Deliveries FY15 - APN (8 Kits)	2	2015	2	2015
Deliveries: Production Deliveries FY16 - APN (8 Kits)	2	2016	2	2016

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603254N: <i>ASW Systems Development</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	25.144	8.249	7.915	-	7.915	8.125	8.268	8.472	8.556	Continuing	Continuing
0490: <i>Airborne Acoustic Intelligence (AAI)</i>	3.479	-	-	-	-	-	-	-	-	0.000	3.479
1292: <i>Adv ASW Sensors &amp; Proc</i>	9.771	5.739	5.454	-	5.454	5.669	5.819	6.019	6.080	Continuing	Continuing
3222: <i>Advanced High Altitude ASW</i>	2.837	2.510	2.461	-	2.461	2.456	2.449	2.453	2.476	Continuing	Continuing
9999: <i>Congressional Adds</i>	9.057	-	-	-	-	-	-	-	-	0.000	9.057

**A. Mission Description and Budget Item Justification**

Includes RDT&E funds for advanced development and developmental testing of airborne anti-submarine warfare (ASW) systems, including aircraft, equipment, and devices for use against all types of submarine targets; and advanced, high-performance, underwater, mobile target for use in fleet ASW training exercises and for the operational evaluation of the MK-30 torpedo and the MK-48 torpedo weapons system improvement program; and Project BEARTRAP. Definition of Project BEARTRAP is classified.

Excludes civilian and military manpower and their related costs and military construction cost which are included in appropriated management and support elements in this program. Project 0490 moved to new Military Intelligence Program (MIP) Program Element (0303354N) in FY 2011 and beyond.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	25.553	8.249	8.438	-	8.438
Current President's Budget	25.144	8.249	7.915	-	7.915
Total Adjustments	-0.409	-	-0.523	-	-0.523
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.083	-			
• Program Adjustments	-	-	-0.442	-	-0.442
• Section 219 Reprogramming	-0.318	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.081	-	-0.081
• Congressional General Reductions Adjustments	-0.008	-	-	-	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603254N: *ASW Systems Development*

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

**Project: 9999: Congressional Adds**

- Congressional Add: *Air Readiness/Effectiveness Measurement Program*
- Congressional Add: *Marine Mammal Detection System*
- Congressional Add: *Marine Species Mitigation*
- Congressional Add: *Marine Mammal Alert System*
- Congressional Add: *Sonobouy Wave-Energy Module*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	1.593	-
	1.992	-
	2.285	-
	2.390	-
	0.797	-
Congressional Add Subtotals for Project: 9999	9.057	-
Congressional Add Totals for all Projects	9.057	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule:

3222. The OPNAV (N882C1C) sponsor focused the initial study for the Analysis of Alternatives (AoA) for the implementation of the High Altitude ASW mission on the P-8A aircraft. This project focus is for studies and analyses of capabilities to better perform the High Altitude mission on the P-8A Aircraft vice the complete development of a specific capability. As a result, the following schedule changes were made. Precision Placement statement removed. Choose system concepts for Technology Demos removed from 1Q/11. HW/SW Product Development removed from 2Q/11 thru 4Q/15. Experimentation and Technology Demos removed from 4Q/11 thru 1Q/15. Transition Decisions removed from 3Q/15. Deliveries removed from 4Q/12, 4Q/13 and 4Q/14. Trade studies will continue from 2Q/13 thru 4Q/16.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0490: <i>Airborne Acoustic Intelligence (AAI)</i>	3.479	-	-	-	-	-	-	-	-	0.000	3.479
Quantity of RDT&E Articles	2	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The mission of Airborne Acoustic Intelligence (AAI), Chief of Naval Operations (CNO) Project K-0416, is to provide Sound Pressure Level (SPL) quality recordings of targets of interest and an associated new technology, rapid prototyping mechanism for the application of state-of-the-art collection sensors. The program will develop and rapidly deploy new technology concepts in hardware and software to effectively address emerging littoral threats and to improve the present Undersea Warfare capability in support of Sea Shield/Sea Trial Initiatives. AAI also provides a measurement analysis capability to reconstruct, analyze and develop active target strength measurement validation. The AAI data collection program provides passive and active acoustic and non-acoustic data essential for the design and development of environmental models, sensors, weapons, software algorithms, and tactical decision aids. AAI employs developmental and prototypical hardware installed in uniquely configured ASW aircraft to collect data of interest, and specially configured ground support facilities to conduct reconstruction and analysis of this data. AAI includes calibrated recording systems, advanced detection and tracking systems, special sensors, advanced processing systems and techniques and specially derived operational tactics. The 2 RDT&E articles consist of aircraft calibration units, SPL collection suites, and post mission processors that will support the collection mission.

Military Intelligence Program (MIP) funding previously contained in this PE and Project, moved to a new Program Element (0303354N) in FY 2011 and beyond for enhanced MIP tracking.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Systems Engineering / Aircraft Mods Active Acoustic Program</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Engineering supported SPL Recording. Post mission processor upgrade and engineering supported aircraft calibration unit enhancements for active target strength. Engineering development of Target Strength processing will continue, however, the prototype processor is on hold due to funding reprioritization.</p>	2.329 2	-	-
<p><b>Title:</b> Data Collection and Analysis</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Data collection was supported at Operational Wings. Collection of high interest acoustic and non-acoustic data supported Measurement/Measuring and Signature Intelligence (MASINT)/Office of Naval Intelligence (ONI) threat assessment requirements.</p>	0.750 0	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Reduction, Analysis and Fleet Rapid Feedback. Conducted airborne special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development.				
<b>Title:</b> Active Measurement Validation				
<b>FY 2010 Accomplishments:</b> Active Measurement Validation of targets of interest. Provided the acoustic analysis of echo characterization (which includes: signal excess (SE) measurements, peak frequency (PF), trend analysis and pulse duration measurements) and target strength.		<b>Articles:</b> 0.400 0	-	-
<b>Accomplishments/Planned Programs Subtotals</b>		3.479	-	-
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> AAI is a CNO Special Project (K-0146). The included technology developments are primarily in-house with contractor participation through existing vehicles.				
<b>E. Performance Metrics</b> Continued engineering to support SPL recording. Continue data collection support at operation wings. Continued Active Measurement validation of targets of interest.				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 1292: <i>Adv ASW Sensors &amp; Proc</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1292: <i>Adv ASW Sensors &amp; Proc</i>	9.771	5.739	5.454	-	5.454	5.669	5.819	6.019	6.080	Continuing	Continuing
Quantity of RDT&E Articles	300	100	100	0	100	100	100	100	100		

**A. Mission Description and Budget Item Justification**

This program provides Air Anti-Submarine Warfare (ASW) platform effectiveness through development of advanced hardware and software associated with airborne acoustic and non-acoustic systems. This includes sensors, processing, post-processing, data recording and display capabilities to address regional threat scenarios against surfaced or submerged conventionally and nuclear powered submarines. Key objectives are platform accommodations of advanced active and passive sensors, improved detection, classification, localization, tracking, and increased capacity and flexibility to handle multi-sensor data loads. Programs being funded during the FYDP will investigate technologies such as: Over the Horizon (OTH) Communications, Distributed Netted Sensors, transient signals, and source and receiver improvement technologies that will enhance passive and Multi-static Active Sensor Systems capabilities. Other programs being funded during the FYDP will provide for the development of persistent tactical search technologies that will allow transition to the localization and attack phase in all operationally relevant environments. In addition, the program will provide for the development and subsequent experimentation, including data collection and engineering measurement, of Multi-static Active Coherent (MAC) sources and receivers, laser technologies, electro-optical and Multi-Spectral camera technologies, Radar, and Magnetic Anomaly Detection sensors. The test articles, which consist of passive/active sensors and associated processors, will support at-sea trials and experiments.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> System performance assessments	9.771	5.739	5.454
<b>Articles:</b>	300	100	100
<b>FY 2010 Accomplishments:</b> Performed system performance assessments for Multi-Static Active (Coherent) ASW algorithms and other Acoustic and Non-Acoustic system enhancements. The test articles, which consist of passive/active sensors and associated processors, supported at-sea trial and experiments.			
<b>FY 2011 Plans:</b> System performance assessments for Multi-Static Active (Coherent) ASW algorithms and other Acoustic and Non-Acoustic system enhancements. The test articles, which consist of passive/active sensors and associated processors, will support at-sea trial and experiments.			
<b>FY 2012 Plans:</b> System performance assessments for Multi-Static Active (Coherent) ASW algorithms and other Acoustic and Non-Acoustic system enhancements. The test articles, which consist of passive/active sensors and associated processors, will support at-sea trial and experiments.			
<b>Accomplishments/Planned Programs Subtotals</b>	9.771	5.739	5.454

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 1292: <i>Adv ASW Sensors &amp; Proc</i>

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

N/A

**D. Acquisition Strategy**

The included technology development are primarily in-house with contractor participation through existing vehicles.

**E. Performance Metrics**

Perform system assessments for MAC ASW algorithms and other Acoustic and Non-Acoustic system enhancements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 1292: <i>Adv ASW Sensors &amp; Proc</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hdw Development	Various	VARIOUS:VARIOUS	0.516	0.400	Nov 2010	0.400	Dec 2011	-		0.400	1.350	2.666	2.666
<b>Subtotal</b>			0.516	0.400		0.400		-		0.400	1.350	2.666	2.666

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Software Development	WR	NAWCAD:PATUXENT RIVER, MD	3.425	-		-		-		-	0.000	3.425	
Studies & Analysis	WR	NAWCAD:PATUXENT RIVER, MD	5.181	-		-		-		-	6.525	11.706	
<b>Subtotal</b>			8.606	-		-		-		-	6.525	15.131	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Dev Test & Eval	Various	VARIOUS:VARIOUS	14.931	0.750	Nov 2010	0.500	Dec 2011	-		0.500	0.000	16.181	16.181
<b>Subtotal</b>			14.931	0.750		0.500		-		0.500	0.000	16.181	16.181

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Eng Spt	Various	VARIOUS:VARIOUS	10.930	3.308	Nov 2010	3.327	Dec 2011	-		3.327	8.895	26.460	26.460
ENG & TECH SVCS (NON-FFRDC)	Various	VARIOUS:VARIOUS	2.582	0.100	Nov 2010	0.100	Dec 2011	-		0.100	1.316	4.098	4.098
MGT & PROF SVCS (FFRDC)	Various	VARIOUS:VARIOUS	0.202	0.214	Nov 2010	0.214	Dec 2011	-		0.214	0.800	1.430	1.430
Government Eng Spt	WR	NAWCAD:PATUXENT RIVER, MD	54.832	0.892	Nov 2010	0.847	Dec 2011	-		0.847	4.376	60.947	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 1292: <i>Adv ASW Sensors &amp; Proc</i>
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Proj: 1292 - Adv ASW Sensors & Processors	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Performance Assessment</b>	Multi Statics Target Rec				Concurrent Proc/Battery Tech								Distributed Netted Sensors																			
	OTH Comms								Engineering Measurement																							
<b>Transition Decision</b>	Multi Statics Target Rec ◆				OTH Comms ◆				Concurrent Proc/Battery Tech ◆				Distributed Netted Sensors ◆																			
<b>Software</b>	Software Development																															
<b>Experiment/Exercise Participation</b>	Experiment/Exercise Participation																															
<b>Deliveries</b>	300 ■				100 ■				100 ■				100 ■				100 ■				100 ■				100 ■				100 ■			

2012PB - 0603254N - 1292 Test Note

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 1292: <i>Adv ASW Sensors &amp; Proc</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj: 1292 - Adv ASW Sensors &amp; Processors</b>				
Performance Assessment: Multi-Static Target Recognition	1	2010	4	2010
Performance Assessment: Concurrent Processing/Battery Technology	1	2011	4	2012
Performance Assessment: Distributed Netted Sensors	1	2013	4	2014
Performance Assessment: OTH Communications	1	2010	4	2011
Performance Assessment: Engineering Measurement	1	2012	4	2016
Transition Decision: Multi-Static Target Recognition	4	2010	4	2010
Transition Decision: OTH Communications	4	2011	4	2011
Transition Decision: Concurrent Processing/Battery Technology	4	2012	4	2012
Transition Decision: Distributed Netted Sensors	4	2014	4	2014
Software: Software Development	1	2010	4	2016
Experiment/Exercise Participation: Experiment/Exercise Participation	1	2010	4	2016
Deliveries: Deliveries (1)	1	2010	1	2010
Deliveries: Deliveries (2)	1	2011	1	2011
Deliveries: Deliveries (3)	1	2012	1	2012
Deliveries: Deliveries (4)	1	2013	1	2013
Deliveries: Deliveries (5)	1	2014	1	2014
Deliveries: Deliveries (6)	1	2015	1	2015
Deliveries: Deliveries (7)	1	2016	1	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 3222: <i>Advanced High Altitude ASW</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3222: <i>Advanced High Altitude ASW</i>	2.837	2.510	2.461	-	2.461	2.456	2.449	2.453	2.476	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Advanced High Altitude Anti-Submarine Warfare (AHAASW) program performs studies and analyses to better perform the ASW mission on the P-8A aircraft. The P-8A aircraft, a commercial derivative Boeing 737 airframe, operates most efficiently at high altitudes. These studies are to explore technologies, which may lead to additional high altitude ASW capabilities. The Analysis of Alternatives (AoA) effort is the first study for the implementation of High Altitude ASW on a P-8A aircraft.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Provide precision delivery of sonobuoys	2.837	2.510	2.461
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> AHAASW contributed resources to support an initial Effectiveness and Suitability Study and AoA currently in progress by NAVAIR (AIR-4.10) for the implementation of High Altitude Anti-Submarine Warfare (HAASW) on the P-8A aircraft.			
<b>FY 2011 Plans:</b> FY11 efforts are planned to be a continuation of support to the AHAASW and HAASW AoA initiated in FY10. In addition, it is planned to initiate a Technology Development Strategy (TDS) and fund initiation of additional studies for the execution of ASW at High Altitude.			
<b>FY 2012 Plans:</b> FY12 is scheduled to complete the AHAASW AoA and TDS and other studies initiated in FY11.			
<b>Accomplishments/Planned Programs Subtotals</b>	2.837	2.510	2.461

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

N/A

**D. Acquisition Strategy**

Develop modifications to incorporate capability into current sonobuoy sensors and integration into P-8A as the lead aircraft.

**E. Performance Metrics**

Perform Analysis of Alternatives (AoA) for the Advanced HAASW program.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 3222: <i>Advanced High Altitude ASW</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Development	Various	VARIOUS:VARIOUS	-	1.370	Feb 2011	-		-		-	0.000	1.370	1.370
A/C HW/SW Integration	Various	VARIOUS:VARIOUS	-	-		-		-		-	0.600	0.600	0.600
<b>Subtotal</b>			-	1.370		-		-		-	0.600	1.970	1.970

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Documentation	Various	VARIOUS:VARIOUS	-	-		-		-		-	0.500	0.500	0.500
Studies & Analysis	WR	NAWCAD: PATUXENT RIVER, MD	0.700	0.150	Nov 2010	0.100	Nov 2011	-		0.100	0.200	1.150	
Studies & Analysis	Various	VARIOUS:VARIOUS	0.765	0.300	Nov 2010	1.245	Nov 2011	-		1.245	3.051	5.361	5.361
<b>Subtotal</b>			1.465	0.450		1.345		-		1.345	3.751	7.011	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Field Tests	WR	NAWCAD: PATUXENT RIVER, MD	-	0.050	Aug 2011	0.100	Nov 2011	-		0.100	0.150	0.300	
Field Tests	Various	VARIOUS:VARIOUS	-	-		-		-		-	0.500	0.500	0.500
<b>Subtotal</b>			-	0.050		0.100		-		0.100	0.650	0.800	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Eng Spt	Various	VARIOUS:VARIOUS	0.150	0.050	Nov 2010	0.385	Nov 2011	-		0.385	0.950	1.535	1.535
ENG & TECH SVCS (NON-FFRDC)	Various	VARIOUS:VARIOUS	0.150	0.080	Nov 2010	0.150	Nov 2011	-		0.150	0.421	0.801	0.801

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 3222: <i>Advanced High Altitude ASW</i>
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Proj: 3222 Advanced High Altitude ASW	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Contract Awards</b>																																
	Study Contract ●				Technology Development Contract ●																											
<b>Trade Studies</b>																																
	Study & Analyze concept options																															

2012PB - 0603254N - 3222

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 3222: <i>Advanced High Altitude ASW</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj: 3222 Advanced High Altitude ASW</i></b>				
Contract Awards: Study Contract	1	2010	1	2010
Contract Awards: Technology Development Contract	2	2011	2	2011
Trade Studies: Trade Studies	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	9.057	-	-	-	-	-	-	-	-	0.000	9.057
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

9999. Congressional Adds.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Air Readiness/Effectiveness Measurement Program	1.593	-
<b>FY 2010 Accomplishments:</b> 10C091: Conducted an Air Readiness/Effectiveness Measurement (AIREM) effort, enabling platforms to more effectively counter the current submarine threat.		
<b>Congressional Add:</b> Marine Mammal Detection System	1.992	-
<b>FY 2010 Accomplishments:</b> 10C092: Developed aircraft Intelligence, Surveillance, and Reconnaissance (ISR) systems and acoustics optimized for detecting and tracking marine mammals.		
<b>Congressional Add:</b> Marine Species Mitigation	2.285	-
<b>FY 2010 Accomplishments:</b> 10C093: Deployed acoustic arrays in the pending Shallow Water Test Range planned for construction off the Atlantic coast of Florida.		
<b>Congressional Add:</b> Marine Mammal Alert System	2.390	-
<b>FY 2010 Accomplishments:</b> 9B53A: Marine Mammal Awareness & Alert Response System (MMAARS). Supported concept development for demonstration of systems to link airborne sensor data with databases to help predict low risk zones for Airborne ASW testing and training.		
<b>Congressional Add:</b> Sonobouy Wave-Energy Module	0.797	-
<b>FY 2010 Accomplishments:</b> 9D18A: Sonobuoy Wave-Energy Module. Supported the development of a wave-energy module to harvest energy from ocean waves to replace or supplement sonobuoy batteries to extend the life of ocean sensing sonobuoy systems.		
<b>Congressional Adds Subtotals</b>	9.057	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603254N: <i>ASW Systems Development</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>

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

N/A

**D. Acquisition Strategy**

Not required for Congressional Adds.

**E. Performance Metrics**

Not required for Congressional Adds.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603261N: <i>Tactical Airborne Reconnaissance</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	9.605	6.452	5.978	-	5.978	5.997	6.098	6.207	6.286	Continuing	Continuing
2467: <i>UAV Conops</i>	5.910	4.791	4.405	-	4.405	4.397	4.469	4.540	4.597	Continuing	Continuing
2910: <i>Joint Tech Center/System Integ Lab</i>	1.703	1.661	1.573	-	1.573	1.600	1.629	1.667	1.689	Continuing	Continuing
9999: <i>Congressional Adds</i>	1.992	-	-	-	-	-	-	-	-	0.000	1.992

**A. Mission Description and Budget Item Justification**

This program element funds efforts to develop Concept of Operations in support of the Navy's overall Unmanned Aircraft System (UAS) strategy integrating UASs into the Chief of Naval Operations Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). Also funds Navy's contribution supporting the Joint Technology Center/System Integration Laboratory providing experimentation for Unmanned Aerial Vehicle technology assessment, insertion, demonstration, transfer, as well as simulation and exercise support.

**B. Program Change Summary (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	9.662	6.452	6.522	-	6.522
Current President's Budget	9.605	6.452	5.978	-	5.978
Total Adjustments	-0.057	-	-0.544	-	-0.544
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.493	-	-0.493
• Section 219 Reprogramming	-0.052	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.051	-	-0.051
• Congressional General Reductions Adjustments	-0.005	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Precision Engagement Technologies for Unmanned Systems*

<b>FY 2010</b>	<b>FY 2011</b>
1.992	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999	1.992	-
Congressional Add Totals for all Projects	1.992	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2467: <i>UAV Conops</i>	5.910	4.791	4.405	-	4.405	4.397	4.469	4.540	4.597	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Naval Unmanned Aircraft Systems (UAS) Strategy employs a family of UASs to perform tactical, persistent and - penetrating Intelligence, Surveillance, and Reconnaissance in support of Naval and Joint missions from forward bases/platforms and naval ships.

In support of the Navy's overall UAS strategy, this program develops Concept of Operations (CONOPS) that integrate UASs into the Chief of Naval Operations Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). By providing fleet input based on current operations with UASs in a simulated combat environment, this CONOPS development investment is the foundation of how the Carrier Strike Group and the Expeditionary Strike Group will operate a combined Manned and Unmanned Naval Air Force. This program establishes the common architecture, including Command & Control, for all unmanned systems to support and inform CONOPS development. This effort provides for a cross-program view of Naval Unmanned Systems and is the entry point for OSD and other services for commonality and interoperability. Specifically:

- Provides studies and demonstrations in support of the Naval UAS Family of Systems (FoS) CONOPS development.
- Horizontally integrates across the Naval UAS FoS for the Naval Aviation Enterprise through interoperability and common system solutions.
- Develops the Naval UAS FoS Architecture to support integration into the Naval Unmanned Systems Cross Functional Team.
- Provides Naval support for development of Standards across Department of Defense (DoD) UASs and North Atlantic Treaty Organization (NATO), emphasizing standardization and interoperability.
- Conducts CONOPS studies, demonstrations, and exercises for Vehicle Control, Targeting, and weapons, sensor, and payload employment.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Studies and Demonstrations	0.659	0.885	0.602
<b>Articles:</b>	0	0	0
<b>Description:</b> Studies and demonstrations to develop CONOPS for manned-unmanned integration of UAS and aircraft systems. Build a UAS simulation environment for Modeling and Simulation and a repository of common UAS components in representative battlespace architectures.			
<b>FY 2010 Accomplishments:</b> Built a UAS simulation environment for Modeling and Simulation and initiated a repository of common UAS components in representative battlespace architectures.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>		<b>PROJECT</b> 2467: <i>UAV Conops</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continue development of the UAS simulation environment. <b>FY 2012 Plans:</b> Continue development of the UAS simulation environment.				
<b>Title:</b> Shipboard CONOPS  <b>Description:</b> Conduct studies, demonstrations, and exercises for data relay, comm relay, targeting, vehicle control, and weapons, sensor, and payload employment.  <b>FY 2010 Accomplishments:</b> Completed studies and demonstrations for common vehicle control, sensor and payload employment.  <b>FY 2011 Plans:</b> Conduct studies, demonstrations, and exercises to validate the common Naval Unmanned Systems control system strategy (CCS) and Navy Interoperability profiles.  <b>FY 2012 Plans:</b> Conduct studies, demonstrations, and exercises to validate the common Naval Unmanned Systems CCS and Navy Interoperability profiles.		1.310 0	0.500 0	0.500 0
<b>Title:</b> Engineering and Program Support  <b>Description:</b> Provide government engineering support, program office travel, and contract support services for Naval Unmanned Systems Cross Functional Team, OSD UAS task force and other services on common UAS solutions.  <b>FY 2010 Accomplishments:</b> Provided government engineering support, program office travel, and contract support services for OSD UAS task force and other services on common UAS solutions.  <b>FY 2011 Plans:</b> Provide government engineering support, program office travel, and contract support services for OSD UAS task force and other services on common UAS solutions.  <b>FY 2012 Plans:</b>		0.875 0	0.943 0	0.915 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Provide government engineering support, program office travel, and contract support services for Naval Unmanned Systems Cross Functional Team, OSD UAS task force and other services on common UAS solutions.				
<b>Title:</b> NATO Standardization Agreements (STANAG) and Interoperability		1.158	1.163	1.161
		0	0	0
<b>Articles:</b>				
<b>Description:</b> Conduct CONOPS studies for interoperability and development of standards across Naval Unmanned Systems and NATO emphasizing standardization and interoperability. Continue to develop Unmanned System Interoperability profiles and Navy implementation conventions for Naval UAS FoS Architecture.				
<b>FY 2010 Accomplishments:</b> Developed Navy inputs for Unmanned Systems Interoperability Profile and follow-on revisions. Unmanned Systems Interoperability Profile accepted into DoD Information Technology Standards and Profile Registry and standardized processes used by UAS programs. Supported NATO STANAG Interoperability revisions, configuration management and provided leadership for standards development and generation of STANAG products.				
<b>FY 2011 Plans:</b> Continue CONOPS studies for interoperability and development of standards across Naval Unmanned Systems and NATO emphasizing standardization and interoperability. Continue to develop Unmanned System Interoperability profiles and Navy implementation conventions for Naval UAS FoS Architecture.				
<b>FY 2012 Plans:</b> Continue with ongoing FY11 efforts.				
<b>Title:</b> Architecture Support /Common Ground Station		1.908	1.300	1.227
		0	0	0
<b>Articles:</b>				
<b>Description:</b> Develop a Joint Service revision and configuration management of UAS interoperability profiles and Joint Common Ground Station Architecture and related government engineering support.				
<b>FY 2010 Accomplishments:</b> Supported the revision and configuration management of interoperability profiles and efforts to support development of a common ground station architecture.				
<b>FY 2011 Plans:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Support the revision and configuration management of UAS interoperability profiles and Joint Common Ground Station Architecture and related government engineering support.  <b><i>FY 2012 Plans:</i></b> Continue with ongoing FY11 efforts.				
<b>Accomplishments/Planned Programs Subtotals</b>		5.910	4.791	4.405
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> The program office will leverage existing Government facilities (e.g., Joint Technology Center/System Integration Laboratory (JTC/SIL)) and Naval UAS Program of Record assets (as available) to develop and demonstrate Naval UAS CONOPS. Government engineering support will be used for Modeling and Simulation efforts.				
<b>E. Performance Metrics</b> UAS operations and interoperability for systems delivered to the warfighter are continually improved upon increasing the level of integration, standardization and effective employment in maritime battle space dominance.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	SS/FP	AAI:Hunt Valley, MD	2.800	-		-		-		-	0.000	2.800	2.800
Ship Integration	C/CPFF	L-3 Titan:Marlton, NJ	6.230	0.782	Jan 2011	0.807	Jan 2012	-		0.807	0.000	7.819	7.819
Systems Engineering	WR	NAWCAD:Pax River, MD	2.042	0.290	Nov 2010	0.179	Dec 2011	-		0.179	Continuing	Continuing	Continuing
<b>Subtotal</b>			11.072	1.072		0.986		-		0.986			

**Remarks**

Primary Hardware Development contract type is SS/FP.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development Support	Various	Various:Various	12.932	0.433	Dec 2010	0.357	Jan 2012	-		0.357	Continuing	Continuing	Continuing
Software Development	MIPR	JTC/SIL:Redstone Arsenal, AL	4.158	1.300	Mar 2011	1.227	Mar 2012	-		1.227	Continuing	Continuing	Continuing
Studies & Analysis	WR	NAWCWD:China Lake, CA	2.085	0.351	Dec 2010	0.394	Dec 2011	-		0.394	Continuing	Continuing	Continuing
Studies & Analysis	WR	NAWCAD:Pax River, MD	2.578	0.403	Dec 2010	0.178	Dec 2011	-		0.178	Continuing	Continuing	Continuing
<b>Subtotal</b>			21.753	2.487		2.156		-		2.156			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Interoperability	WR	NAWCWD:China Lake, CA	2.182	0.220	Dec 2010	0.225	Dec 2011	-		0.225	Continuing	Continuing	Continuing
<b>Subtotal</b>			2.182	0.220		0.225		-		0.225			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government Engineering Support	Various	Various:Various	4.571	0.625	Dec 2010	0.437	Dec 2011	-		0.437	Continuing	Continuing	Continuing
Program Management Support	Various	Various:Various	2.093	0.367	Dec 2010	0.559	Dec 2011	-		0.559	Continuing	Continuing	Continuing
Travel	WR	NAVAIR HQ:Pax River, MD	0.399	0.020	Oct 2010	0.042	Nov 2011	-		0.042	Continuing	Continuing	Continuing
<b>Subtotal</b>			7.063	1.012		1.038		-		1.038			

**Remarks**  
Travel contract type is TO.

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	42.070	4.791		4.405		-		4.405			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603261N: *Tactical Airborne  
 Reconnaissance*

**PROJECT**

2467: *UAV Conops*

UAV CONOPS	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
Unmanned Aircraft System (UAS) Targeting																												
Weapons and Payload Employment																												
Task and Manning Assessment																												
Standards Based Interoperability																												
UASs Family of Systems and Shipboard Interoperability																												

2012PB - 0603261N - 2467

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2467: <i>UAV Conops</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>UAV CONOPS</b>				
Unmanned Aircraft System (UAS) Targeting: Unmanned Aircraft System (UAS) Targeting	1	2010	2	2011
Weapons and Payload Employment: Weapons and Payload Employment	1	2010	4	2011
Task and Manning Assessment: Task and Manning Assessment	1	2010	4	2011
Standards Based Interoperability: Standards Based Interoperability	1	2010	4	2016
UASs Family of Systems and Shipboard Interoperability: UASs Family of Systems and Shipboard Interoperability	1	2010	4	2016

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>				<b>PROJECT</b> 2910: <i>Joint Tech Center/System Integ Lab</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2910: <i>Joint Tech Center/System Integ Lab</i>	1.703	1.661	1.573	-	1.573	1.600	1.629	1.667	1.689	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a center of technical excellence to support Unmanned Aircraft Systems (UAS) programs within the services. The mission includes Service-specific and Joint Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance (C4ISR) programs throughout Department of Defense (DoD). JTC/SIL provides a Government test bed for interoperability, rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and C4ISR optimization. The cornerstone of JTC/SIL's diverse tool set is the Multiple Unified Simulation Environment (MUSE), which is the DoD's simulation/training system of choice for many UAS and Intelligence Surveillance and Reconnaissance (ISR) systems, and to some degree, surrogate UAS ground stations, when actual UAS ground stations are unavailable.

The Services and Warfighting Commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and Concept of Operations (CONOPS) development, and Tactics, Techniques, and Procedures (TTP) refinement, conduct emerging concepts experimentation, and optimize C4ISR within warfighting exercises and experiments. It is the preferred simulation system used by the Combat Commanders and Joint Services to support command and battle staff C4ISR training, there is no better alternative to satisfy those requirements.

The MUSE also creates a realistic operational environment that supports: an embedded training capability for multiple Program Managers, tools to minimize acquisition and life cycle cost and schedule impacts, the ability to conduct emerging concepts experimentation, future systems exploration, systems integration, and technology insertion, applications for Joint and Service-specific warfighting exercises and C4ISR optimization.

MUSE is currently in use within all services and most unified commands simulating Predator, Global Hawk (RQ-4), Extended Range Multi-Purpose, Hunter, and Shadow (RQ-7) UAS, national and commercial satellite collectors, P-3, Joint Surveillance Target Attack Radar, and the U-2. During warfighting exercises, the JTC/SIL integrates imagery simulations with associated C4ISR systems to support execution of critical imagery processes. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. Distributed training environments, virtually linking participants from various locations worldwide, are routinely supported within the MUSE architecture. The MUSE is also used as a mission rehearsal tool for current, on-going military combat operations.

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> MUSE Development				0.831	0.779	0.777
<b>Articles:</b>				0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2910: <i>Joint Tech Center/System Integ Lab</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Description:</b> MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and CONOPS development, TTP refinement, conduct emerging concepts experimentation, and C4ISR optimization within warfighting exercises and experiments.</p> <p><b>FY 2010 Accomplishments:</b> Developed multi-echelon MUSE UAS and manned ISR integrated training environments that incorporate command and staff and initial qualification and proficiency trainers. Maintained MUSE simulation capability to support major exercises and demonstrations, completed integration of Tactical Exploitation of National Capabilities simulation into a PC-based MUSE, continued development of Laser Designator, Laser Range finding, Autotrack, Weaponization, enhanced Synthetic Aperture Radar, and Ground Moving Target Indicator capability, upgraded National Space Assets enhancements, Command, Control, Communications, Computers and Intelligence enhancements, and enhancements to the Vignette Planning and Rehearsal Software.</p> <p><b>FY 2011 Plans:</b> Continues those efforts ongoing but not yet completed from FY10.</p> <p><b>FY 2012 Plans:</b> Continues those efforts ongoing but not yet completed from FY11.</p>				
<p><b>Title:</b> Engineering and Maintenance</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Maintenance, Licenses and Equipment Purchases to include the day-to-day maintenance of laboratory equipment, license maintenance and license renewals from vendors for individual pieces of equipment, purchases of equipment to support the MUSE, and purchases to upgrade the MUSE capability.</p> <p><b>FY 2010 Accomplishments:</b> Provided for the continued maintenance and required equipment purchases and upgrades to support the MUSE.</p> <p><b>FY 2011 Plans:</b> Continues the maintenance and upkeep of the MUSE facility.</p> <p><b>FY 2012 Plans:</b> Continues the maintenance and upkeep of the MUSE facility.</p>		0.500 0	0.500 0	0.500 0
<p><b>Title:</b> Program Management</p> <p align="right"><b>Articles:</b></p>		0.372 0	0.382 0	0.296 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2910: <i>Joint Tech Center/System Integ Lab</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Description:</b> Includes government management, contracts administration, cost accounting, configuration management, laboratory administrative support, MUSE architecture development, property management/accountability, and equipment procurement.</p> <p><b>FY 2010 Accomplishments:</b> Provided for the continued Laboratory Sustainment with government management and overhead support services, architecture development and equipment purchases.</p> <p><b>FY 2011 Plans:</b> Continues Laboratory Sustainment with government management and overhead support services, architecture development and equipment purchases.</p> <p><b>FY 2012 Plans:</b> Continues Laboratory Sustainment with government management and overhead support services, architecture development and equipment purchases.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.703	1.661	1.573

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

N/A

**D. Acquisition Strategy**

Established for the DoD family of UASs as a center of technical excellence for tactical, medium altitude endurance and future UASs to provide a cost-effective testbed for UAS technology assessment, insertion, demonstration, and transfer. JTC/SIL technical experts serve as facilitators of action for Program Executive Offices and UAS Program Managers as well as the respective users and prime contractors.

**E. Performance Metrics**

Improve the assessment of military utility, Tactics, Techniques and Procedures and C4ISR optimization through realistic training of command and battle staffs.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2910: <i>Joint Tech Center/System Integ Lab</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	MIPR	JTC/SIL:Redstone Arsenal, AL	1.343	1.279	Mar 2011	1.277	Mar 2012	-		1.277	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.343	1.279		1.277		-		1.277			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Engineering Support	MIPR	JTC/SIL:Redstone Arsenal, AL	0.360	0.382	Nov 2010	0.296	Dec 2011	-		0.296	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.360	0.382		0.296		-		0.296			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	1.703	1.661		1.573		-		1.573			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603261N: *Tactical Airborne  
Reconnaissance*

**PROJECT**

2910: *Joint Tech Center/System Integ Lab*

Joint Tech Center/System Integ Lab                           	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
Multiple Unified Simulation Environment Support to Unmanned Aircraft System Developers																																

2012PB - 0603261N - 2910

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 2910: <i>Joint Tech Center/System Integ Lab</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Joint Tech Center/System Integ Lab</b>				
Multiple Unified Simulation Environment Support to Unmanned Aircraft System Developers:	1	2010	4	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603261N: <i>Tactical Airborne Reconnaissance</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	1.992	-	-	-	-	-	-	-	-	0.000	1.992
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add. Support development of the Precision Engagement Technologies Required for Unmanned Systems (PETRUS). The intent of PETRUS is to develop and implement the technologies required to compress the timeline associated with Finding, Fixing, Tracking, Targeting, Engaging and Assessing targets of interest.

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

<b>Congressional Add:</b> Precision Engagement Technologies for Unmanned Systems	FY 2010	FY 2011
	1.992	-
<b>FY 2010 Accomplishments:</b> Develop, integrate, and demonstrate the necessary enabling technologies that will permit compression of the find and fix timeline. These technologies include: georegistration (high fidelity coordinates), sensor advancement, target tracking and targeting algorithms, system miniaturization and micro-munitions integration.		
<b>Congressional Adds Subtotals</b>	1.992	-

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

N/A

**D. Acquisition Strategy**

Not required for Congressional Adds.

**E. Performance Metrics**

Not required for Congressional Adds.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	3.605	1.658	1.418	-	1.418	1.511	1.579	1.744	1.774	Continuing	Continuing
0324: <i>Adv Combat System Technology</i>	1.613	1.658	1.418	-	1.418	1.511	1.579	1.744	1.774	Continuing	Continuing
9999: <i>Congressional Adds</i>	1.992	-	-	-	-	-	-	-	-	0.000	1.992

**A. Mission Description and Budget Item Justification**

The Advanced Combat System Technology line is to evolve the technical and business practices for programs to change to an open architecture construct. The program was constructed to mature both technical and business model integration for C5I systems programs of record in an open architecture environment. The priority was incorporating the principles of modular design and design disclosure, reusable application software, interoperability and secure information exchange, lifecycle affordability and encouraging competition and collaboration.

Project Unit 0324: Funding is to maintain a repository environment to improve transparency of design disclosure and to support the principle of cross-domain reuse. The other elements of the Naval Open Architectures (OA) transformation effort are to be realized as management efficiencies within programs. Those elements include ensuring that all Naval systems, family of systems, and programs move to modular OA in accordance with Department of Defense (DOD) 5000.1 dated 12 May 2003 which mandates that all DOD programs utilize open systems architecture in order to rapidly field affordable and interoperable systems. By direction of the Navy Service Acquisition Executive (SAE), PEO IWS is assigned overall responsibility and authority to direct the Navy's OA effort. That policy established a need to coordinate acquisition strategies, develop guidance, and develop analysis of alternatives to determine OA software reuse practices within and across all Navy Communities of Interest (COI - Surface, Subsurface, Air, Space, and C4I). This project is to work closely with the T&E and certification communities in defining regression testing and certification requirements for all OA upgrades and software reuse applications. This project seeks to create a strategic shift in the acquisition business process to facilitate cooperative competition in cross-domain/COI business relationships. This will improve innovation and economies of scale throughout the Navy. This development effort will identify the business case and return on investment for moving the Navy towards an open systems approach, support the development of open systems technologies, and integrate best business and technical practices for open systems development within Naval acquisition. Naval OA project ensure Navy-wide system architectures become extensible and scalable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, and reuse methodologies. In summary, this funding supports the management of a reuse repository and to evolve business, systems engineering and cultural changes required across all Naval programs as they are migrated to function in a joint net centric warfare environment.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	3.662	1.658	1.677	-	1.677
Current President's Budget	3.605	1.658	1.418	-	1.418
Total Adjustments	-0.057	-	-0.259	-	-0.259
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.057	-			
• Program Adjustments	-	-	-0.213	-	-0.213
• Rate/Misc Adjustments	-	-	-0.046	-	-0.046

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *OpenArchitecture/Maintenance Free Operating Period*

	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999	1.992	-
Congressional Add Totals for all Projects	1.992	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>				<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0324: <i>Adv Combat System Technology</i>	1.613	1.658	1.418	-	1.418	1.511	1.579	1.744	1.774	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project Unit 0324: Funding is to maintain a repository environment to improve transparency of design disclosure and to support the principle of cross-domain reuse. The other elements of the Naval Open Architectures (OA) transformation effort are to be realized as management efficiencies within programs. Those elements include ensuring that all Naval systems, family of systems, and programs move to modular OA in accordance with Department of Defense (DOD) 5000.1 dated 12 May 2003 which mandates that all DOD programs utilize open systems architecture in order to rapidly field affordable and interoperable systems. By direction of the Navy Service Acquisition Executive (SAE), PEO IWS is assigned overall responsibility and authority to direct the Navy's OA effort. That policy established a need to coordinate acquisition strategies, develop guidance, and develop analysis of alternatives to determine OA software reuse practices within and across all Navy Communities of Interest (COI - Surface, Subsurface, Air, Space, and C4I). This project is to work closely with the T&E and certification communities in defining regression testing and certification requirements for all OA upgrades and software reuse applications. This project seeks to create a strategic shift in the acquisition business process to facilitate cooperative competition in cross-domain/COI business relationships. This will improve innovation and economies of scale throughout the Navy. This development effort will identify the business case and return on investment for moving the Navy towards an open systems approach, support the development of open systems technologies, and integrate best practices for open systems development within Naval acquisition. Naval OA project ensures Navy-wide system architectures become extensible and scalable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, and reuse methodologies. In summary, this funding supports the management of a reuse repository and to evolve business, systems engineering and cultural changes required across all Naval programs as they are migrated to function in a joint net centric warfare environment.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Align the Naval Enterprise Across All Domains to Implement OA	0.170	0.200	0.150
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> OA Enterprise Alignment: This funding supports the preparation and execution of the Naval OA Strategy, including the quarterly OA Enterprise Team Lead Council meetings and reporting requirements of the OA Enterprise Team (OAET). Specifically, this includes OAET reporting of action items to Deputy Assistant Secretary of the Navy (DASN), report to Congress, as well as the annual OA budget submission and financial reporting for this project. Alignment across the Enterprise also includes the development and management of all other activities as the Lead Council directs. During FY10, Share II was brought online which transitions from a government prototype to an industry application, OA Contract Guidebook Version 2.0 was released which			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>provides contract language for increased utilization of open source software applications and product reuse, and the program office conducted OA compatibility analysis on Ship Machinery Control Systems for PEO ships.</p> <p><b>FY 2011 Plans:</b> OA Enterprise Alignment: This funding supports the preparation and execution of the Naval OA Strategy, including the quarterly OA Enterprise Team Lead Council meetings and reporting requirements of the OA Enterprise Team (OAET). Specifically, this includes OAET reporting of action items to DASN, report to Congress, as well as the annual OA budget submission and financial reporting for this project. Alignment across the Enterprise also includes the development and management of all other activities as the Lead Council directs.</p> <p><b>FY 2012 Plans:</b> OA Enterprise Alignment: This funding supports the preparation and execution of the Naval OA Strategy, including the quarterly OA Enterprise Team Lead Council meetings and reporting requirements of the OA Enterprise Team (OAET). Specifically, this includes OAET reporting of action items to DASN, report to Congress, as well as the annual OA budget submission and financial reporting for this project. Alignment across the Enterprise also includes the development and management of all other activities as the Lead Council directs.</p>				
<p><b>Title:</b> Change the Naval and Marine Corps Cultures to Institutionalize OA Principle</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> OA Enterprise Communications and Training: This funding supports the activities to enable the cultural adoption of OA principles and practices through stakeholder management, communications, training, and OA Knowledge Management. Key activities include the development on an enterprise workforce training and education program and establishment of professional curricula (OA modular acquisition and OA systems engineering) with academia and Naval Institutes. This program plan includes participation, liaison, and coordination with multiple stakeholders including the Department of Navy Chief Information Officer (DON CIO), Naval Post Graduate School, and other communication vehicles, to identify OA standards and technologies and incorporate into Naval system acquisition.</p> <p><b>FY 2011 Plans:</b> OA Enterprise Communications and Training: This funding supports the activities to enable the cultural adoption of OA principles and practices through stakeholder management, communications, training, and OA Knowledge Management. Key activities include the development on an enterprise workforce training and education program and establishment of professional curricula (OA modular acquisition and OA systems engineering) with academia and Naval Institutes. This program plan includes participation, liaison, and coordination with multiple stakeholders including the Department of Navy Chief Information Officer (DON</p>		0.350 0	0.335 0	0.300 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>CIO), Naval Post Graduate School, and other communication vehicles, to identify OA standards and technologies and incorporate into Naval system acquisition.</p> <p><b>FY 2012 Plans:</b>                      OA Enterprise Communications and Training: This funding supports the activities to enable the cultural adoption of OA principles and practices through stakeholder management, communications, training, and OA Knowledge Management. Key activities include the development on an enterprise workforce training and education program and establishment of professional curricula (OA modular acquisition and OA systems engineering) with academia and Naval Institutes. This program plan includes participation, liaison, and coordination with multiple stakeholders including the Department of Navy Chief Information Officer (DON CIO), Naval Post Graduate School, and other communication vehicles, to identify OA standards and technologies and incorporate into Naval system acquisition.</p>				
<p><b>Title:</b> OA Systems Engineering Leadership</p> <p><b>FY 2010 Accomplishments:</b>                      Systems Engineering: This funding supports systems engineering collaboration across the enterprise to facilitate the fielding of interoperable capabilities including a) the alignment of PEO architectures (e.g. PEO IWS and PEO C4I); b) providing guidance to Technical Warrant Holder who oversee OA implementation efforts ensuring standardized and disciplined processes are utilized across domains (e.g. standards and interfaces, services); c) working with the Science &amp; Technology (S&amp;T) community to ensure OA is coordinating on emerging technologies; and d) working with the Test &amp; Evaluation (T&amp;E) community and academia/industry partners to identify opportunities to reduce T&amp;E expenses as a result of OA.</p> <p><b>FY 2011 Plans:</b>                      Systems Engineering: This funding supports systems engineering collaboration across the enterprise to facilitate the fielding of interoperable capabilities including a) the alignment of PEO architectures (e.g. PEO IWS and PEO C4I); b) providing guidance to Technical Warrant Holder who oversee OA implementation efforts ensuring standardized and disciplined processes are utilized across domains (e.g. standards and interfaces, services); c) working with the S&amp;T community to ensure OA is coordinating on emerging technologies; and d) working with the T&amp;E community and academia/industry partners to identify opportunities to reduce T&amp;E expenses as a result of OA.</p> <p><b>FY 2012 Plans:</b>                      Systems Engineering: This funding supports systems engineering collaboration across the enterprise to facilitate the fielding of interoperable capabilities including a) the alignment of PEO architectures (e.g. PEO IWS and PEO C4I); b) providing guidance to Technical Warrant Holder who oversee OA implementation efforts ensuring standardized and disciplined processes are utilized across domains (e.g. standards and interfaces, services); c) working with the S&amp;T community to ensure OA is coordinating on</p>		<p><b>Articles:</b></p> <p>0.450 0</p>	<p>0.450 0</p>	<p>0.368 0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	
emerging technologies; and d) working with the T&E community and academia/industry partners to identify opportunities to reduce T&E expenses as a result of OA.					
<b>Title:</b> Change Naval Processes and Business Practices					
		<b>Articles:</b>	0.643 0	0.673 0	0.600 0
<b>FY 2010 Accomplishments:</b> Naval Business Practices: This funding supports the required activities of the OA Enterprise Team to change software reuse Naval Business Practices including a) the development and refinement of policies, guidance and terminology required to establish a consistent approach for OA across the enterprise; b) assist the Milestone Decision Authority, Program Manager (PM), and Resource Sponsor in assessing the development and maintenance of analytical toolsets (i.e. OA Assessment Tool) programs openness, to make informed OA investment decisions; and c) the facilitation of design disclosure and cross-domain component reuse to reduce costs and enable more effective technology insertion including the administration of an OA Enterprise Asset Repository Capability that incorporates a common end-user licensing agreement and enterprise configuration management processes that are open and accessible to all Naval and Joint programs and qualified vendors. During FY10 the funding will cover the Software Hardware Asset Reuse Enterprise (SHARE) effort. SHARE establishes a functional process and asset repository to publish government owned assets central to the OA strategy. This repository is key to the health and maturity of the Navy OA effort and serves as an enterprise wide asset. Repository efforts are being transitioned to leverage lower cost alternatives.					
<b>FY 2011 Plans:</b> Naval Business Practices: This funding supports the required activities of the OA Enterprise Team to change software reuse Naval Business Practices including a) the development and refinement of policies, guidance and terminology required to establish a consistent approach for OA across the enterprise; b) assist the Milestone Decision Authority, PM, and Resource Sponsor in assessing the development and maintenance of analytical toolsets (i.e. OA Assessment Tool) programs openness, to make informed OA investment decisions; and c) the facilitation of design disclosure and cross-domain component reuse to reduce costs and enable more effective technology insertion including the administration of an OA Enterprise Asset Repository Capability that incorporates a common end-user licensing agreement and enterprise configuration management processes that are open and accessible to all Naval and Joint programs and qualified vendors. Funding will cover the Software Hardware Asset Reuse Enterprise (SHARE) effort. SHARE establishes a functional process and asset repository to publish government owned assets central to the OA strategy. This repository is key to the health and maturity of the Navy OA effort and serves as an enterprise wide asset. Repository efforts will transition to leverage lower cost alternatives.					
<b>FY 2012 Plans:</b> Naval Business Practices: This funding supports the required activities of the OA Enterprise Team to change software reuse Naval Business Practices including a) the development and refinement of policies, guidance and terminology required to establish					



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
a consistent approach for OA across the enterprise; b) assist the Milestone Decision Authority, PM, and Resource Sponsor in assessing the development and maintenance of analytical toolsets (i.e. OA Assessment Tool) programs openness, to make informed OA investment decisions; and c) the facilitation of design disclosure and cross-domain component reuse to reduce costs and enable more effective technology insertion including the administration of an OA Enterprise Asset Repository Capability that incorporates a common end-user licensing agreement and enterprise configuration management processes that are open and accessible to all Naval and Joint programs and qualified vendors. Funding will cover the Software Hardware Asset Reuse Enterprise (SHARE) effort. SHARE establishes a functional process and asset repository to publish government owned assets central to the OA strategy. This repository is key to the health and maturity of the Navy OA effort and serves as an enterprise wide asset. Repository efforts will transition to leverage lower cost alternatives.			
<b>Accomplishments/Planned Programs Subtotals</b>	1.613	1.658	1.418

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• R&D/0604307N /1447: <i>AEGIS Surf Combatant Combat Sys Imp</i>	177.109	193.933	223.283	0.000	223.283	224.116	371.311	341.508	381.221	Continuing	Continuing
• R&D/0604755N /2178: <i>Ship Self Defense System</i>	26.925	36.594	64.360	0.000	64.360	67.514	60.681	51.265	49.236	Continuing	Continuing
• R&D/0603658N /2039: <i>Cooperative Engagement Capability</i>	54.295	52.282	54.783	0.000	54.783	44.360	62.234	67.430	80.382	Continuing	Continuing

**D. Acquisition Strategy**

This risk reduction effort evolved and shifted from a PEO IWS 1.0 task to Naval Surface Warfare Center (NSWC)/Dahlgren to an Assistant Secretary of the Navy, Research, Development & Acquisition (ASN-RDA) directed task to fund the Navy's OA Enterprise effort from this core OA. Budget line (policy statement dated 5 August 2004). The strategy was further refined in the Deputy Chief of Naval Operations (DCNO) requirement of 23 December 2005 (N6/7) with guidance for this effort to assist the Milestone Decision Authority (MDA), program managers, and resource sponsors in assessing enterprise program assets where appropriate. Office of the Chief of Naval Operations (OPNAV) has directed this program to provide objective, measurable, performance based assessments as Business Case Analysis (BCA) baselines for future system changes and spiral developments.

**E. Performance Metrics**

Change Naval Processes and business practices to cost-effectively innovate and deploy improved warfighting capability based on fleet requirements. Provide OA Systems Engineering to field common, interoperable capabilities; Change Navy and Marine Corps Business Cultures to Institutionalize OA Principles.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
SE/OA Domain Support	C/FP	APL:Baltimore, MD	0.725	-		-		-		-	0.000	0.725	Continuing
Systems Engineering	WR	NSWC / Dahlgren:Dahlgren, VA	11.953	0.705	Nov 2010	0.700	Oct 2011	-		0.700	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CRANE & Carderock:VARIOUS	2.062	-		-		-		-	0.000	2.062	Continuing
Systems Engineering	C/CPAF	Lockheed Martin, NJ; General Dynamics, VA; IBM:Washington DC	4.606	0.253	Dec 2010	0.061	Dec 2011	-		0.061	0.000	4.920	Continuing
OA DOMAIN SUPPORT	WR	NUWC/Newport, Spawar, Navair:VARIOUS	11.931	-		-		-		-	0.000	11.931	Continuing
SE/Signal Processor	C/CPAF	Lockheed Martin:VARIOUS	6.000	-		-		-		-	0.000	6.000	Continuing
SE/Signal Processor	C/CPAF	BAE:VARIOUS	0.300	-		-		-		-	0.000	0.300	Continuing
SE/Signal Processor	C/CPAF	Raytheon:VARIOUS	0.100	-		-		-		-	0.000	0.100	Continuing
SE/Signal Processor	WR	NSWC/DD, NRL, PHD:VARIOUS	0.600	-		-		-		-	0.000	0.600	Continuing
<b>Subtotal</b>			38.277	0.958		0.761		-		0.761			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Industry Development	C/FP	IBM, ANGLE:VARIOUS	8.393	0.500	Dec 2010	0.457	Nov 2011	-		0.457	0.000	9.350	Continuing
Technical Data-Academia	WR	NPS-Monterey/ DAU:MONTEREY, CA	1.876	-		-		-		-	0.000	1.876	Continuing
Software Development	C/FP	MITRE, SEI:VARIOUS	0.309	-		-		-		-	0.000	0.309	Continuing
<b>Subtotal</b>			10.578	0.500		0.457		-		0.457	0.000	11.535	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>Acquisition Milestones</b>																												
Incorporate OA Principles in Strategies, Contracts, Reviews, Requirements, & Other Documentation	△		△		△		△		△		△		△		△		△		△		△		△		△		△	
Change Culture through OA Education, Outreach, & Training	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Conduct Program Assessments		△				△				△				△			△				△				△			
Adapt ONR Technologies	△		△		△		△		△		△		△		△		△		△		△		△		△		△	
Publish Contract Guidebook Update			△								△										△							
Host OA Symposium				△				△				△				△				△				△				△
Deliver Report to Congress	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Host OA Lead Council Meetings	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 0324: <i>Adv Combat System Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0324</b>				
Incorporate OA Principles in Acquisition Strategies and Contracts	1	2010	3	2016
Change Culture through OA Education, Outreach and Training	1	2010	4	2016
Conduct Program Assessments	2	2010	2	2016
Adapt ONR Technologies	1	2010	3	2016
Publish Contract Guidebook Update	3	2010	3	2016
Host Contracting/Industry Symposium	4	2010	4	2016
Deliver Report to Congress	1	2010	4	2016
Host OA Lead Council Meeting	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603382N: <i>Advanced Combat Systems Tech</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	1.992	-	-	-	-	-	-	-	-	0.000	1.992
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Open Architecture/Maintenance Free Operating Period (MFOP)- This funding supports the pilot program for AN/BSY-10, co-sponsored with ASN (RDA), it incorporates software tools and hardware redundancy into Commercial Off-The-Shelf (COTS) based open architected systems such that the system self-checking and self-healing capabilities virtually eliminate at-sea open cabinet maintenance. This funding extends the application of OA/MFOP to investigate the adoption of MFOP tools in other Navy National Security Systems as an OA reusable component.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> OpenArchitecture/Maintenance Free Operating Period	1.992	-
<b>FY 2010 Accomplishments:</b> 1) Complete the OA/MFOP System Verification Testing 2) Obtain Interim Authority To Operate (IATO)/Information Assurance (IA) Certification allowing the OA/MFOP Demonstration system to connect to the Navy's SIPRnet for distance support communications. 3) Finish Installation of the Demonstration System aboard LHD 7 4) Conduct the live Demonstration on a combatant platform (6 Month Test) 5) Report Lessons Learned		
<b>Congressional Adds Subtotals</b>	1.992	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Successfully establish new methods for reducing lifecycle costs.



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	93.750	81.347	142.657	-	142.657	150.032	128.194	79.157	59.145	Continuing	Continuing
0260: <i>Remote Minehunting Systems</i>	10.967	19.691	50.043	-	50.043	39.325	32.271	24.175	19.103	Continuing	Continuing
1233: <i>Surface MCM Mid-life Upgrade</i>	20.922	13.479	25.593	-	25.593	30.268	26.255	19.593	19.758	Continuing	Continuing
2131: <i>Assault Breaching System</i>	29.652	31.245	49.200	-	49.200	58.906	58.517	32.905	17.697	Continuing	Continuing
3123: <i>SMCM UUV</i>	15.030	12.732	17.821	-	17.821	21.533	11.151	2.484	2.587	Continuing	Continuing
4025: <i>Expendable Mine Neutralization System</i>	1.245	4.200	-	-	-	-	-	-	-	0.000	5.445
9999: <i>Congressional Adds</i>	15.934	-	-	-	-	-	-	-	-	0.000	15.934

**A. Mission Description and Budget Item Justification**

The program provides for developments to combat the threat of known and projected foreign mines against U.S. Naval and merchant shipping in harbors, channels, choke points, sea lines of communications and amphibious and other fleet operating areas. It develops: (1) organic remote minehunting capability for surface platforms; (2) the integration and improvement of systems and support for systems which will detect, localize, classify, and neutralize moored, bottom, and close-tethered mines for use in Mine Countermeasure (MCM) MCM-1 Class and other surface ships; (3) systems for neutralizing mines and light obstacles from shallow water, very shallow water, surf zones, and beach landing craft zones in support of amphibious operations.

Congressional plus-up for the Remote Minehunting System program.

Congressional plus-up for the Persistent Autonomous Maritime Surveillance program.

Congressional plus-up for the Mine Hunting Sonar program.

(U) B. JUSTIFICATION FOR BUDGET ACTIVITY:

This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental testing related to specific ship or aircraft applications.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	92.334	81.347	88.515	-	88.515
Current President's Budget	93.750	81.347	142.657	-	142.657
Total Adjustments	1.416	-	54.142	-	54.142
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	3.749	-			
• SBIR/STTR Transfer	-1.984	-			
• Program Adjustments	-	-	55.588	-	55.588
• Section 219 Reprogramming	-0.339	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.446	-	-1.446
• Congressional General Reductions Adjustments	-0.010	-	-	-	-

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

**Project: 9999: Congressional Adds**

Congressional Add: *RMS Prog - Cong*

Congressional Add: *Persistent Autonomous Maritime Surveillance*

Congressional Add: *Mine Hunting Sonar Prog - Cong*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	7.967	-
	4.979	-
	2.988	-
Congressional Add Subtotals for Project: 9999	15.934	-
Congressional Add Totals for all Projects	15.934	-

**Change Summary Explanation**

Program Adjustments: FY12 \$55,142K in Total Adjustments for Fund RMMV to OSD CAPE estimate in support of Nunn-McCurdy Receritification (\$32,080K), MEDAL EA/Improved Interoperability (\$900K), Unmanned Surface Sweep System (\$4,700K), COBRA BLK II Development (\$18,600K), Countermine System Funding (\$2,000K), COBRA precision Nav MCM (-\$1,000K), Programmatic Misc changes )-\$1,446K), and ATRT and Consulting services reductions (-\$1,446).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>				<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0260: <i>Remote Minehunting Systems</i>	10.967	19.691	50.043	-	50.043	39.325	32.271	24.175	19.103	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The AN/WLD-1(V)1 Remote Minehunting System (RMS) is a mine reconnaissance system designed for the detection, classification, identification, and localization of bottom and moored targets in shallow and deep water. RMS is a fully integrated system consisting of a semi-submersible Remote Multi-Mission Vehicle (RMMV) carrying a towed variable depth sensor. Line-Of-Sight (LOS) and Over-The-Horizon (OTH) telemetry provides vehicle Command and Control and mine reconnaissance sensor data transmission to/from a system aboard a Navy ship. RMS will provide the Navy the capability to keep ships and sailors out of the minefield.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> Product Development:	8.954	8.941	13.644	-	13.644
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b> Conduct accelerated life testing, as part of the RMMV Reliability Growth Program.					
<b>FY 2011 Plans:</b> Conduct accelerated life testing, as part of the RMMV Reliability Growth Program.					
<b>FY 2012 Base Plans:</b> Conduct accelerated life testing, as part of the RMMV Reliability Growth Program.					
<b>Title:</b> Support:	1.513	3.000	7.706	-	7.706
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b> Provide engineering, logistic and programmatic support for RMMV accelerated life and confidence testing.					
<b>FY 2011 Plans:</b> Provide engineering, logistic and programmatic support for RMMV accelerated life and confidence testing.					
<b>FY 2012 Base Plans:</b> Provide engineering, logistic and programmatic support for RMMV accelerated life and confidence testing.					
<b>Title:</b> T&E:	-	7.250	27.689	-	27.689
<b>Articles:</b>		0	0		0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b><i>FY 2011 Plans:</i></b> Conduct component and system testing in support of the Reliability Growth Program.					
<b><i>FY 2012 Base Plans:</i></b> Conduct component and system testing in support of the Reliability Growth Program.					
<b><i>Title:</i></b> Management:					
<b><i>Articles:</i></b>	0.500 0	0.500 0	1.004 0	-	1.004 0
<b><i>FY 2010 Accomplishments:</i></b> Provided program management and travel for RMMV Spiral testing.					
<b><i>FY 2011 Plans:</i></b> Provided program management and travel for RMMV Spiral testing.					
<b><i>FY 2012 Base Plans:</i></b> Provided program management and travel for RMMV Spiral testing.					
<b>Accomplishments/Planned Programs Subtotals</b>	10.967	19.691	50.043	-	50.043

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2622: <i>Minesweeping System Replacement</i>	0.000	5.027	0.000	0.000	0.000	0.000	0.000	17.989	17.204	Continuing	Continuing
• OPN/1600: <i>LCS Modules</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.300	61.032	Continuing	Continuing

**D. Acquisition Strategy**  
 The RMS(V)3 focused on a prototype development, and was competitively awarded to Lockheed Martin in August 1996. The RMS(V)4, officially designated the AN/WLD-1(V)(1), was awarded as a sole source contract to Lockheed Martin in 2002. MS C on 1 July 2005 authorized procurement of three (3) LRIPs in FY05. Conducted Operational Assessment in August 2006 to support FY06 (2nd) LRIP Decision. ASN(RDA) approved FY06 (2nd) LRIP up to 4 units. This decision was documented in Acquisition Decision Memorandum (ADM) dated 21 Sep 2006. The Program Decision Memorandum (PDM) authorizing production of LRIP #8, FY08 LRIP Option was issued by ASN(RDA) on 2 Apr 08. An Operational Assessment (OA) was conducted in 4th Qtr FY08. Acquisition Decision Memorandum (ADM) dated 01 Jun 2010 issued by USD (AT&L) declared the program as being post-MS B. Conduct reliability improvement program to return to OT in FY12.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>

**E. Performance Metrics**

Complete RGP.  
Complete DT and OT.  
Begin FRP in FY14.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development & Integration 1	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	97.283	-		-		-		-	0.000	97.283	
Hardware Development & Integration 2	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	95.993	-		-		-		-	0.000	95.993	
Hardware Development & Integration	WR	NSWC, PC: PANAMA CITY, FL	7.140	-		-		-		-	0.000	7.140	
Systems Engineering 1	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	5.465	-		-		-		-	0.000	5.465	
Systems Engineering 2	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	10.211	6.000	Dec 2010	8.555	Dec 2011	-		8.555	Continuing	Continuing	Continuing
Systems Engineering 3	WR	NSWC, PC: PANAMA CITY, FL	2.353	2.941	Nov 2010	5.089	Nov 2011	-		5.089	Continuing	Continuing	Continuing
Award Fees	SS/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	5.485	-		-		-		-	0.000	5.485	
<b>Subtotal</b>			223.930	8.941		13.644		-		13.644			

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development 1	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	7.092	-		-		-		-	0.000	7.092	
Software Development 2	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	6.961	-		-		-		-	0.000	6.961	
Software Development 3	WR	NSWC, PC: RIVIERA BEACH, FL	2.142	-		-		-		-	0.000	2.142	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
ILS 1	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	17.836	-		-		-		-	0.000	17.836	
ILS 2	SS/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	-	2.000	Dec 2010	5.196	Dec 2011	-		5.196	Continuing	Continuing	Continuing
ILS 3	WR	NSWC, PC: PANAMA CITY, FL	4.057	1.000	Nov 2010	2.510	Nov 2011	-		2.510	0.000	7.567	
ILS 4	WR	VARIOUS:VARIOUS	1.125	-		-		-		-	0.000	1.125	
Ship Integration 1	SS/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	1.258	-		-		-		-	0.000	1.258	
Ship Integration 2	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	11.938	-		-		-		-	0.000	11.938	
Ship Integration 3	Various	VARIOUS:VARIOUS	13.714	-		-		-		-	0.000	13.714	
<b>Subtotal</b>			66.123	3.000		7.706		-		7.706			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation 1	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	18.470	-		-		-		-	0.000	18.470	
Developmental Test & Evaluation 2	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	25.171	2.500	Dec 2010	4.032	Dec 2011	-		4.032	0.000	31.703	
Developmental Test & Evaluation 3	WR	NSWC, PC: PANAMA CITY, FL	9.244	4.750	Nov 2010	23.657	Nov 2011	-		23.657	0.000	37.651	
Developmental Test & Evaluation 4	WR	COTF: NORFOLK, VA	0.300	-		-		-		-	0.000	0.300	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation 5	WR	VARIOUS:VARIOUS	5.298	-		-		-		-	0.000	5.298	
<b>Subtotal</b>			58.483	7.250		27.689		-		27.689	0.000	93.422	

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Engineering Support	C/CPIF	LOCKHEED MARTIN:RIVIERA BEACH, FL	6.569	-		-		-		-	0.000	6.569	
Government Engineering Support1	WR	NSWC, PC: PANAMA CITY, FL	22.996	-		-		-		-	0.000	22.996	
Government Engineering Support2	WR	NSWC, PC: PANAMA CITY, FL	0.187	0.050	Nov 2010	0.134	Nov 2011	-		0.134	0.000	0.371	
Program Management Support	C/CPFF	CACI: WASHINGTON, DC	4.358	-		-		-		-	0.000	4.358	
Travel	WR	NAVSEA: WNY, DC	0.616	0.050	Nov 2010	0.118	Nov 2011	-		0.118	0.000	0.784	
SBIR Assessment	WR	VARIOUS:VARIOUS	6.761	0.400	Jan 2011	0.752	Jan 2012	-		0.752	0.000	7.913	
<b>Subtotal</b>			41.487	0.500		1.004		-		1.004	0.000	42.991	

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		390.023	19.691		50.043		-	50.043			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>
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Proj 0260	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Milestones</b>	NM Breach ▲				NM Cert ▲																MS C ▲							
<b>Events</b>	Contract Awards ▲ BOA								RGP Completion ▲												LRIP ▲							
Reliability Growth Program					RGP				RGP				RGP				DT/OA ▲											
In-Water Testing	V4.1 Baseline Improvements																											
					V4.2 Improvements																							
													V4.3 Improvements															
<b>Deliveries</b>					LRIP 8 ▲																				2 LRIPS ▲			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 0260: <i>Remote Minehunting Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0260</b>				
Milestones: Nunn-McCurdy Breach	1	2010	1	2010
Milestones: Nunn-McCurdy Certification	3	2010	3	2010
Milestones: Milestone C	3	2014	3	2014
Events: Contract Awards: BOA Award	1	2010	1	2010
Events: Contract Awards: RGP Completion Contract	1	2012	1	2012
Events: Contract Awards: LRIP Award	4	2014	4	2014
Events: Reliability Growth Program: Reliability Growth Program	2	2010	1	2014
Events: Reliability Growth Program: DT/OA	2	2014	2	2014
Events: In-Water Testing: V4.1 Baseline Improvements	1	2010	4	2011
Events: In-Water Testing: V4.2 Improvements	4	2010	2	2013
Events: In-Water Testing: V4.3 Improvements	2	2013	2	2014
Deliveries: LRIP 8	4	2010	4	2010
Deliveries: 2 LRIPs	4	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1233: <i>Surface MCM Mid-life Upgrade</i>	20.922	13.479	25.593	-	25.593	30.268	26.255	19.593	19.758	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

(1) AN/SQQ-32(V)4 High-Frequency, Wide Band (HFWB) is a technology upgrade to the AN/SQQ-32 Towed Body which will incorporate HFWB technology into the detection sonar to address performance deficiencies against new mine threats in the littorals. This upgrade will be installed on MCM-1 Class ships with the AN/SQQ-32(V)3 and will develop new transducer modules, fiber optic cable and modify topside processing and display software. 2) Mine Warfare and Environmental Decision Aids Library (MEDAL) is a software segment on the Global Command and Control System - Maritime (GCCS-M). MEDAL provides mine and mine warfare planning and evaluation tools and databases to the MCM Commander. 3) Develop and implement Mine Countermeasures Commander's Estimate of the Situation (MCM CES). 4) Unmanned Surface Sweep System (US3) is a magnetic/acoustic sweep system developed to sweep acoustic/magnetic influence mines from an unmanned surface platform deployed from the Littoral Combat Ship (LCS).

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> MCM CES/PRODUCT DEVELOPMENT:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Development of CES functionality in a MEDAL EA environment.</p> <p><b>FY 2011 Plans:</b> Development of CES functionality in a MEDAL EA environment.</p> <p><b>FY 2012 Base Plans:</b> Development of CES functionality in a MEDAL EA environment.</p>	0.154 0	0.100 0	0.120 0	-	0.120 0
<p><b>Title:</b> MCM CES/SUPPORT:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness in reducing the complexity of the MCM planning problem into a manageable set of options depending on the operational objective. Support effort to include communication with activities such as ONR and NSWC-PC to coordinate the incorporation of validated algorithms and models into MEDAL with the CES framework in order to effectively simplify the MCM planning problem for CSG and ESG staffs and therefore provide the speed, agility,</p>	0.076 0	0.069 0	0.083 0	-	0.083 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
adaptability, and flexibility required for modern MCM operations. Validate Fleet usability of Planning on Risk (PoR) module.  <b>FY 2011 Plans:</b> Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness in reducing the complexity of the MCM planning problem into a manageable set of options depending on the operational objective. Support effort to include communication with activities such as ONR and NSWC-PC to coordinate the incorporation of validated algorithms and models into MEDAL with the CES framework in order to effectively simplify the MCM planning problem for CSG and ESG staffs and therefore provide the speed, agility, adaptability, and flexibility required for modern MCM operations. Validate Fleet usability of Planning on Risk (PoR) module.  <b>FY 2012 Base Plans:</b> Continue introduction of capability and Planning on Risk (PoR) functionality via a limited fielding to Fleet Users including Mine Counter Measures Squadrons (MCMRONs) and Naval Mine and Anti Submarine Warfare Command (NMAWC).					
<b>Title:</b> MCM CES/TEST AND EVALUATION:  <div style="text-align: right;"><b>Articles:</b></div>	0.127 0	0.126 0	0.151 0	-	0.151 0
<b>FY 2010 Accomplishments:</b> Conduct integration testing with MEDAL EA v1.  <b>FY 2011 Plans:</b> Conduct integration testing with MEDAL EA v1.  <b>FY 2012 Base Plans:</b> Conduct integration testing with MEDAL EA v1.					
<b>Title:</b> MCM CES/MANAGEMENT:  <div style="text-align: right;"><b>Articles:</b></div>	0.026 0	0.026 0	0.031 0	-	0.031 0
<b>FY 2010 Accomplishments:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>Program management shall include overall technical guidance and leadership for the program. Other ongoing PM support includes oversight of financial and logistics efforts and adequate coordination with MEDAL. Other PM tasking to include briefings, demonstrations, and project planning as required.</p> <p><b>FY 2011 Plans:</b> Program management shall include overall technical guidance and leadership for the program. Other ongoing PM support includes oversight of financial and logistics efforts and adequate coordination with MEDAL. Other PM tasking to include briefings, demonstrations, and project planning as required.</p> <p><b>FY 2012 Base Plans:</b> Program management shall include overall technical guidance and leadership for the program. Other ongoing PM support includes oversight of financial and logistics efforts and adequate coordination with MEDAL. Other PM tasking will include briefings, demonstrations, and project planning as required.</p>					
<p><b>Title:</b> HFWB/PRODUCT DEVELOPMENT:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Began system engineering, requirements analysis and design for AN/SQQ-32(V)4 HFWB P3I to include through the Sensor effort.</p> <p><b>FY 2011 Plans:</b> FY11 continue system engineering, requirements analysis, design and development for AN/SQQ-32(V)4 HFWB P3I effort.</p> <p><b>FY 2012 Base Plans:</b> FY12 continue system engineering, requirements analysis, design and development for AN/SQQ-32(V)4 HFWB P3I effort.</p>	2.313 0	1.612 0	1.552 0	-	1.552 0
<p><b>Title:</b> HFWB/SUPPORT:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Began software requirements, configuration, and software integration for AN/SQQ-32(V)4 HFWB P3I effort.</p> <p><b>FY 2011 Plans:</b></p>	0.370 0	0.353 0	0.342 0	-	0.342 0

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
FY11 continue system engineering and requirements analysis for AN/SQQ-32(V)4 HFWB P3I effort. <b>FY 2012 Base Plans:</b> FY12 continue system engineering and requirements analysis for AN/SQQ-32(V)4 HFWB P3I effort.					
<b>Title:</b> HFWB/TEST AND EVALUATION:  <b>Articles:</b>	0.100 0	0.100 0	0.100 0	-	0.100 0
<b>FY 2010 Accomplishments:</b> Perform lab testing for AN/SQQ-32(V)4 HFWB P3I effort. <b>FY 2011 Plans:</b> FY11 continue to perform lab testing for AN/SQQ-32(V)4 HFWB P3I effort. <b>FY 2012 Base Plans:</b> FY12 continue to perform lab testing for AN/SQQ-32(V)4 HFWB P3I effort.					
<b>Title:</b> HFWB/MANAGEMENT:  <b>Articles:</b>	0.158 0	0.136 0	0.120 0	-	0.120 0
<b>FY 2010 Accomplishments:</b> Provide program management support and travel for AN/SQQ-32(V)4 HFWB Upgrade program. <b>FY 2011 Plans:</b> FY11 provide program management support and travel for AN/SQQ-32(V)4 HFWB Upgrade program. <b>FY 2012 Base Plans:</b> FY12 provide program management support and travel for AN/SQQ-32(V)4 HFWB Upgrade program.					
<b>Title:</b> MEDAL/PRODUCT DEVELOPMENT:  <b>Articles:</b>	5.140 0	3.708 0	4.767 0	-	4.767 0
<b>FY 2010 Accomplishments:</b> Complete Iteration 4 and initiate development of Iteration 5; Field global Server <b>FY 2011 Plans:</b> Complete Iteration 5 and initiate development of Iteration 6. <b>FY 2012 Base Plans:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Testing and evaluation support for limited fielding of Tactical Server (Iteration 5). Continue and complete development of Iteration 6. Initial Domain Analysis of Iteration 7.					
<b>Title:</b> MEDAL/SUPPORT:  <div style="text-align: right;"><b>Articles:</b></div>	0.466 0	0.435 0	0.474 0	-	0.474 0
<b>FY 2010 Accomplishments:</b> Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness with respect to their objectives. Support effort to include communication with activities such as applied labs, government activities, and designated contractors. Assist in providing the speed, agility, adaptability, and flexibility required for modern MCM operations.					
<b>FY 2011 Plans:</b> Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness with respect to their objectives. Support effort to include communication with activities such as applied labs, government activities, and designated contractors. Assist in providing the speed, agility, adaptability, and flexibility required for modern MCM operations.					
<b>FY 2012 Base Plans:</b> Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness with respect to their objectives. Support effort to include communication with activities such as applied labs, government activities, and designated contractors. Assist in providing the speed, agility, adaptability, and flexibility required for modern MCM operations.					
<b>Title:</b> MEDAL/TEST AND EVALUATION:  <div style="text-align: right;"><b>Articles:</b></div>	1.322 0	1.965 0	2.908 0	-	2.908 0
<b>FY 2010 Accomplishments:</b> Conduct Testing on Iteration 4.					
<b>FY 2011 Plans:</b> Conduct Testing on Iteration 5.					
<b>FY 2012 Base Plans:</b> Conduct DT and initial operational suitability activities with Mine Counter Measures Squadrons (MCMRONs) and Naval Mine and Anti Submarine Warfare Command (NMAWC).					
<b>Title:</b> MEDAL/MANAGEMENT:	0.572	0.519	0.768	-	0.768

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Articles:</b>	0	0	0		0
<p><b><i>FY 2010 Accomplishments:</i></b> Provide program management support and travel for MEDAL program. Program management shall include overall technical guidance and leadership for the program. Oversight of financial and logistics efforts and coordination with Navy and other DoD organizations and contractors as required to ensure successful execution of the program. As part of the systems engineering element of PM, communicate and coordinate with MIW C4ISR, ICWS, Organic MCM, Mainstreaming MIW, Expeditionary Warfare C4ISR, tactics development, long term planning, Naval Special Clearance Team (NSCT)-1, Assault Breaching Systems of Systems (ABSoS), LCS, and other programs as they relate to MEDAL and MIW Mission Planning, Evaluation, and C4ISR. Other PM tasking to include briefings, demonstrations, and project planning as required.</p> <p><b><i>FY 2011 Plans:</i></b> Provide program management support and travel for MEDAL program. Program management shall include overall technical guidance and leadership for the program. Oversight of financial and logistics efforts and coordination with Navy and other DoD organizations and contractors as required to ensure successful execution of the program. As part of the systems engineering element of PM, communicate and coordinate with MIW C4ISR, ICWS, Organic MCM, Mainstreaming MIW, Expeditionary Warfare C4ISR, tactics development, long term planning, Naval Special Clearance Team (NSCT)-1, Assault Breaching Systems of Systems (ABSoS), LCS, and other programs as they relate to MEDAL and MIW Mission Planning, Evaluation, and C4ISR. Other PM tasking to include briefings, demonstrations, and project planning as required.</p> <p><b><i>FY 2012 Base Plans:</i></b> Provide program management support and travel for MEDAL program. Program management shall include overall technical guidance and leadership for the program. Oversight of financial and logistics efforts and coordination with Navy and other DoD organizations and contractors as required to ensure successful execution of the program. As part of the systems engineering element of PM, communicate and coordinate with MIW C4ISR, ICWS, Organic MCM, Mainstreaming MIEW, Expeditionary Warfare C4ISR, tactics development, long term planning, Naval Special Clearance Team (NSCT-1) Assault Breaching Systems of Systems (ABSoS), LCS, and other programs as they relate to MEDAL and MIW Mission Planning, Evaluation, and C4ISR. Other PM tasking to include briefings, demonstrations, and project planning as required.</p>					
<b>Title:</b> US3/PRODUCT DEVELOPMENT:	2.134	0.780	9.564	-	9.564
<b>Articles:</b>	0	0	0		0



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b><i>FY 2010 Accomplishments:</i></b> Preparation of Milestone B documentation.</p> <p><b><i>FY 2011 Plans:</i></b> Continue Milestone B documentation. Complete risk reduction tasks.</p> <p><b><i>FY 2012 Base Plans:</i></b> Conduct Milestone B. Begin engineering and manufacturing development phase.</p>					
<p><b>Title:</b> US3/SUPPORT:</p> <p align="right"><b>Articles:</b></p>	3.079 0	1.847 0	1.273 0	-	1.273 0
<p><b><i>FY 2010 Accomplishments:</i></b> Engineering and ILS support for Milestone B documentation.</p> <p><b><i>FY 2011 Plans:</i></b> Engineering and ILS support for Milestone B documentation.</p> <p><b><i>FY 2012 Base Plans:</i></b> Completion of Milestone B.</p>					
<p><b>Title:</b> US3/TEST AND EVALUATION:</p> <p align="right"><b>Articles:</b></p>	3.848 0	0.809 0	1.800 0	-	1.800 0
<p><b><i>FY 2010 Accomplishments:</i></b> Sweep Cable development and testing. Test and Evaluation Master Plan (TEMP) preparation. Sweep Power System (SPS) development and testing. Corrected deficiencies for Mission Module compatibility.</p> <p><b><i>FY 2011 Plans:</i></b> SPS final test. Continue TEMP development.</p> <p><b><i>FY 2012 Base Plans:</i></b> Complete TEMP. Technology Development testing.</p>					
<p><b>Title:</b> US3/MANAGEMENT:</p> <p align="right"><b>Articles:</b></p>	1.037 0	0.894 0	1.540 0	-	1.540 0
<p><b><i>FY 2010 Accomplishments:</i></b></p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Program support and management necessary to monitor contractor progress; review system capabilities; monitor cost and schedule; monitor contractor deliverables.  <b>FY 2011 Plans:</b> Program support for Milestone B documentation.  <b>FY 2012 Base Plans:</b> Complete Milestone B in 1st Qtr; Support the award of the engineering and manufacturing development contract in the 2nd Qtr.					
<b>Accomplishments/Planned Programs Subtotals</b>	20.922	13.479	25.593	-	25.593

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2622: LV075/LV078/LV080	49.108	43.018	10.114	0.000	10.114	6.219	10.382	7.641	8.040	0.000	134.522

**D. Acquisition Strategy**

HFVB - Naval Surface Warfare Center, Panama City (NSWC, PC) and ARL UT designed and developed the HFVB upgrade to the AN/SQQ-32. Mine Warfare and Environmental Decision Aids Library (MEDAL) - requirements for MEDAL Builds are generated through a formal requirements process. Requirements conferences gather a list of candidate functions based on a logical sequence to fully implement the overall software architecture. The fleet is presented with a recommended list of candidate capabilities based on this program plan, doctrine, fleet comments, and technology. These capability items are then prioritized by the fleet representatives (coordinated by Commander Mine Warfare Command (COMINEWARCOM)). The fleet inputs are then consolidated by COMINEWARCOM into an overall list which is then presented to Navy leadership for pricing and final selection. The selection is based on price, risk, available funding, and possibly by other program factors (e.g., ensure that MEDAL supports other program delivery schedules). Selection balances immediate needs, long term objectives, technical maturity and other programmatic factors. A verification and validation process is applied to any algorithms, tactics, or models to be incorporated in the software. MEDAL development to include integration of data fusion techniques and incorporation of Data Access Layer (DAL) architecture to meet FORCENet requirements. Acquisition strategy for Mine Countermeasures Commander's Estimate of the situation (MCM CES) is to deliver the software module within MEDAL builds by implementing the CES framework into the MEDAL software.

US3- The Unmanned Surface Sweep System (US3) effort was transferred from ONR to PMS495 in FY07. Program transferred to PMS403 in FY09 and transitioned into PMS406 in FY10. PMS406 will award an Engineering and Manufacturing Development (EMD) contract to continue development of the system. US3 will be capable of sweeping mines in the littoral waters. The EMD phase will include a Milestone C and Low Rate Initial Production (LRIP) award in FY14 and a Full Rate Production Decision Review (FRPDR) in FY16.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>

**E. Performance Metrics**

- Successfully reach Milestone B in FY12
- Complete Critical Design Review (CDR) in FY13
- Successfully reach Milestone C in FY14

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP: Develop Bottom Sediment Classifier	WR	NRL:WASHINGTON, DC	0.258	-		-		-		-	0.000	0.258	
Systems Engineering and Integration	WR	NSWC, PC: PANAMA CITY, FL	0.306	-		-		-		-	0.000	0.306	
System Development 1	WR	NSWC, PC: SAN DIEGO, CA	0.373	-		-		-		-	0.000	0.373	
Systems Engineering 2	WR	NSWC, PC: PANAMA CITY, FL	2.915	-		-		-		-	0.000	2.915	
Systems Engineering 3 MCM CES	WR	NSWC, PC: PANAMA CITY, FL	1.288	0.100	Nov 2010	0.120	Nov 2011	-	Nov 2011	0.120	Continuing	Continuing	Continuing
HFWB: Primary Hardware Development 1	C/CPAF	NSWC, PC/ARL UT: FLORIDA/TEXAS	15.511	-		-		-		-	0.000	15.511	
Primary Hardware Development 2	WR	ARL-UT: AUSTIN, TX	-	-		-		-		-	0.000	0.000	
HFWB: Tow Cable Development	C/CPAF	NSWC, PC/ARL UT: FLORIDA/TEXAS	1.399	-		-		-		-	0.000	1.399	
HFWB: Ship Integration	WR	NSWC, PC: PANAMA CITY, FL	1.697	-		-		-		-	0.000	1.697	
HFWB: SYSTEM ENGINEER	C/CPAF	NSWC/ARL UT: FLORIDA/TEXAS	2.313	1.612	Nov 2010	1.552	Nov 2011	-		1.552	0.000	5.477	
Software Development Medal	C/CPFF	SAIC: SAN DIEGO, CA	22.135	3.708	Nov 2010	4.767	Nov 2011	-		4.767	0.000	30.610	
US3: Product Development 1	C/CPFI	ITT: PANAMA CITY, FL	5.198	-		-		-		-	0.000	5.198	
US3: Product Development 2	WR	NSWC, PC: PANAMA CITY, FL	1.460	0.350	Nov 2010	-		-		-	0.000	1.810	
US3: Product Development 3	C/CPAF	TBD: TBD	-	0.430	Dec 2010	9.564	Dec 2011	-		9.564	0.000	9.994	
<b>Subtotal</b>			54.853	6.200		16.003		-		16.003			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop Logistics Products	WR	NSWC, PC: PANAMA CITY, FL	0.160	-		0.083	Nov 2011	-		0.083	0.000	0.243	
Software Development 1	C/CPFF	SAIC: SAN DIEGO, CA	0.350	-		-		-		-	0.000	0.350	
Software Development 2	C/CPFF	SAIC: SAN DIEGO, CA	0.845	0.069	Nov 2010	-		-		-	0.000	0.914	
HFVB Software Development	WR	NSWC, PC/ARL-UT: FLORIDA/TEXAS	6.465	0.300	Nov 2010	0.300	Nov 2011	-		0.300	0.000	7.065	
HFVB Integrated Logistics Support	WR	NSWC, PC: PANAMA CITY, FL	2.670	0.053	Nov 2010	0.042	Nov 2011	-		0.042	0.000	2.765	
Software Engineering 1	WR	SPAWAR: SAN DIEGO, CA	0.572	0.206	Nov 2010	0.644	Nov 2011	-		0.644	0.000	1.422	
Software Engineering 2	WR	NSWC, PC: PANAMA CITY, FL	0.693	0.229	Nov 2010	-		-		-	0.000	0.922	
US3: Engineering 1	C/CPAF	ITT: PANAMA CITY, FL	2.277	-		-		-		-	0.000	2.277	
US3: Integrated Logistics 1	C/CPAF	ITT: PANAMA CITY, FL	1.408	-		-		-		-	0.000	1.408	
US3: Engineering 2	WR	NSWC, PC: PANAMA CITY, FL	3.824	0.788	Nov 2010	1.000	Nov 2011	-		1.000	0.000	5.612	
US3: Integrated Logistics 2	WR	NSWC, PC: PANAMA CITY, FL	2.227	0.318	Nov 2010	0.273	Nov 2011	-		0.273	0.000	2.818	
US3: Engineering 3	C/CPAF	TBD: TBD	-	0.741	Dec 2010	-		-		-	0.000	0.741	
<b>Subtotal</b>			21.491	2.704		2.342		-		2.342	0.000	26.537	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL Test and Evaluation	C/FP	SAIC: San Diego, CA	-	-		2.908	Nov 2011	-		2.908	0.000	2.908	
Test and Evaluation 1	C/CPAF	VARIOUS: VARIOUS	0.347	0.126	Nov 2010	0.151	Nov 2011	-		0.151	0.000	0.624	
HFVB: Developmental Test and Evaluation	WR	NSWC, PC/ARL-UT: FLORIDA/TEXAS	3.999	0.100	Nov 2010	0.100	Nov 2011	-		0.100	0.000	4.199	
Test and Evaluation 2	C/CPAF	VARIOUS: VARIOUS	1.952	1.965	Dec 2010	-		-		-	0.000	3.917	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
US3: Test and Evaluation 3	C/CPPIF	ITT: PANAMA CITY, FL	2.118	-		-		-		-	0.000	2.118	
US3: Test and Evaluation 4	WR	NSWC, PC: PANAMA CITY, FL	3.346	0.809	Nov 2010	1.080	Nov 2011	-		1.080	0.000	5.235	
US3: Test and Evaluation 5	WR	NSWC, CCD: WEST BETHESDA, MD	-	-		0.720	Nov 2011	-		0.720	0.000	0.720	
<b>Subtotal</b>			11.762	3.000		4.959		-		4.959	0.000	19.721	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support 1	C/CPFF	CACI: WASHINGTON, DC	0.263	-		-		-		-	0.000	0.263	
Travel 1	WR	NAVSEA: WNY, DC	0.084	-		-		-		-	0.000	0.084	
Government Engineering Support1	WR	NSWC, PC: PANAMA CITY, FL	0.271	-		0.031	Nov 2011	-		0.031	0.000	0.302	
MEDAL Program Management Support 2	Various	VARIOUS: VARIOUS	0.157	-		0.598	Nov 2011	-		0.598	0.000	0.755	
SBIR Assessment 2	Various	VARIOUS: VARIOUS	0.019	-		-		-		-	0.000	0.019	
Program Management Support 3	C/CPFF	CACI: WASHINGTON, DC	1.120	0.221	Feb 2011	-		-		-	0.000	1.341	
US3: Contractor Management 3	WR	ITT: PANAMA CITY, FL	0.776	-		-		-		-	0.000	0.776	
US3: Government Management Support2	WR	VARIOUS: VARIOUS	2.058	0.620	Nov 2010	1.140	Nov 2011	-		1.140	0.000	3.818	
US3: Travel 2	WR	NAVSEA: WNY, DC	0.075	0.025	Nov 2010	0.100	Nov 2011	-		0.100	0.000	0.200	
Program Management Support 4	C/CPFF	CACI: WASHINGTON, DC	0.080	-		-		-		-	0.000	0.080	
Government Engineering Support3	WR	NSWC, PC: PANAMA CITY, FL	0.090	-		-		-		-	0.000	0.090	
Travel 3	C/CPAF	NAVSEA: WNY, DC	0.256	-		-		-		-	0.000	0.256	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>			
Program Management Support 5	C/CPFF	CACI:WASHINGTON, DC	0.141	0.026	Nov 2010	-		-		-	0.000	0.167		
Government Engineering Support4	WR	NSWC, PC: PANAMA CITY, FL	0.010	-		-		-		-	0.000	0.010		
Travel4	C/CPAF	NSWC, PC: PANAMA CITY, FL	0.069	-		-		-		-	0.000	0.069		
HFWB: Program Management Support 6	C/CPAF	VARIOUS:VARIOUS	1.242	0.126	Jan 2011	0.110	Jan 2012	-		0.110	0.000	1.478		
HFWB: Government Engineering Support5	WR	NSWC, PC: PANAMA CITY, FL	0.750	-		-		-		-	0.000	0.750		
HFWB: Travel 5	C/CPAF	NAVSEA:WNY, DC	0.050	0.010	Nov 2010	0.010	Nov 2011	-		0.010	0.000	0.070		
Government Engineering Support6	WR	NSWC, PC: PANAMA CITY, FL	1.078	0.274	Nov 2010	-		-		-	0.000	1.352		
Travel 6	C/CPAF	NAVSEA:WNY, DC	0.214	0.024	Nov 2010	-		-		-	0.000	0.238		
SBIR Assessment 6	Various	VARIOUS:VARIOUS	0.054	-		-		-		-	0.000	0.054		
Program Management Support 7	C/CPAF	VARIOUS:VARIOUS	0.350	-		-		-		-	0.000	0.350		
US3: Contractor Management 7	C/CPAF	TBD:TBD	-	0.249	Dec 2010	0.300	Nov 2011	-		0.300	0.000	0.549		
Acquisition Workforce Fund	Various	VARIOUS:VARIOUS	0.122	-		-		-		-	0.000	0.122		
<b>Subtotal</b>			9.329	1.575		2.289		-		2.289	0.000	13.193		

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	97.435	13.479		25.593		-		25.593			

**Remarks**

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0603502N: Surface & Shallow Water MCM

**PROJECT**

1233: Surface MCM Mid-life Upgrade

US3	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>																												
Milestones									MSB ●																			
<b>System Development</b>																												
Milestone Documentation	Milestone B Documentation																											
Engineering & Manufacturing Development Phase									E&MD Contract Award ◆																			
Reviews																												
<b>Test and Evaluation</b>																												
Test Events	DT																											
<b>Production Milestones</b>																												
Low Rate Initial Production																												
Full Rate Production																												
<b>Deliveries</b>																												

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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HFWB	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>																												
Milestones			MSC ●																									
			FRPDR ▲																									
<b>System Development</b>																												
P3I																												
<b>Test and Evaluation</b>																												
EQT Testing		EQT Testing																										
<b>Production Milestones</b>																												
Contract Award																												
Full Rate Production																												
<b>Deliveries</b>																												
Intallation																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: Surface & Shallow Water MCM	<b>PROJECT</b> 1233: Surface MCM Mid-life Upgrade
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MEDAL	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016						
	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			
<b>Acquisition Milestones</b>																															
<b>System Development</b>																															
MEDAL EA v.1 Iterations	Iteration 3				Iteration 4																										
			Iteration 5																												
							Iteration 5 Tactical Server																								
							Iteration 6			Iteration 7																					
MEDAL EA v.2 Development																															
																							v.2 Development								
<b>Test and Evaluation</b>																															
Enterprise Arch (EA) v.1								EA DT																							
<b>Production Milestones</b>																															
<b>Deliveries</b>																															

2012PB - 0603502N - 1233

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>
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MCM CES	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>																												
Milestones																												
IOC ▲																												
<b>System Development</b>																												
Future Development																												
Future Development																												
<b>Test and Evaluation</b>																												
Build 1																												
Build 1 Development and Test																												
Build 1 Integration and Test (Fleet Trial)																												
<b>Production Milestones</b>																												
<b>Deliveries</b>																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>US3</b>				
Acquisition Milestones: Milestones: Milestone B	1	2012	1	2012
Acquisition Milestones: Milestones: Milestone C	3	2014	3	2014
Acquisition Milestones: Milestones: Full Rate Production Decision Review	2	2016	2	2016
Acquisition Milestones: Milestones: Initial Operational Capability	4	2016	4	2016
System Development: Milestone Documentation: Milestone B Documentation	1	2010	4	2011
System Development: Engineering & Manufacturing Development Phase: E&MD Contract Award	2	2012	2	2012
System Development: Engineering & Manufacturing Development Phase: Engineering & Manufacturing Development phase	2	2012	2	2014
System Development: Reviews: PDR Decision	3	2012	3	2012
System Development: Reviews: CDR Decision	1	2013	1	2013
Test and Evaluation: Test Events: DT Testing	1	2010	1	2010
Test and Evaluation: Test Events: Operational Assessment	2	2014	2	2014
Test and Evaluation: Test Events: Initial Operation Test and Evaluation	3	2015	2	2016
Production Milestones: Low Rate Initial Production: LRIP Contract Award	3	2014	3	2014
Production Milestones: Low Rate Initial Production: LRIP phase	4	2014	2	2015
Production Milestones: Full Rate Production: FRP phase	2	2016	4	2016
<b>HFWB</b>				
Acquisition Milestones: Milestones: Milestone C	3	2010	3	2010
Acquisition Milestones: Milestones: FRPDR	3	2010	3	2010
System Development: P3I: P3I	2	2010	4	2016
Test and Evaluation: EQT Testing: EQT Testing	1	2010	1	2010

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 1233: <i>Surface MCM Mid-life Upgrade</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Award: Contract Award	4	2010	4	2010
Production Milestones: Full Rate Production: FRP	4	2010	4	2013
Deliveries: Intallation: Installation	4	2011	2	2015
<b>MEDAL</b>				
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 3	1	2010	1	2010
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 4	2	2010	1	2011
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 5	3	2010	4	2011
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 5 Tactical Server	4	2011	4	2011
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 6	4	2011	3	2012
System Development: MEDAL EA v.1 Iterations: EA v.1 Iteration 7	4	2012	3	2013
System Development: MEDAL EA v.2 Development: EA v.2 Development	1	2014	4	2016
Test and Evaluation: Enterprise Arch (EA) v.1: Enterprise Arch (EA) v.1 Development and Test	1	2010	4	2013
Test and Evaluation: Enterprise Arch (EA) v.1: EA v.1 Operational Assessment (OA)	4	2013	4	2013
<b>MCM CES</b>				
Acquisition Milestones: Milestones: IOC	4	2011	4	2011
System Development: Future Development: MCM CES Future Development	1	2012	4	2016
Test and Evaluation: Build 1: Build 1 Development and Test	1	2010	1	2011
Test and Evaluation: Build 1: Build 1 Integration and Test (Fleet Trial)	2	2011	3	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2131: <i>Assault Breaching System</i>	29.652	31.245	49.200	-	49.200	58.906	58.517	32.905	17.697	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This program provides for a combination of U.S. Navy projects planned to counter the threat to amphibious landing forces from known and projected foreign land/sea mines, obstacles in the beach zone and surf zone approaches to amphibious assault areas. The Assault Breaching System (ABS) of Systems (Countermine/Counter Obstacle, Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T), Precision Navigation/Virtual Marking/Integration, C4I/Data Fusion) provides a full assault breaching capability which is an essential element to the Ship To Objective Maneuver (STOM) Concept of Operations.

Countermine/Counter Obstacle (CM/CO) - Far term - Counter Mine System (CMS) - transitioned from a 6.3 S&T Concept Demonstration effort to a 6.4 development program after a concept decision/AoA in FY06. CMS provides a near surface neutralization capability to the Navy.

ISR/T - Coastal Battlefield Reconnaissance and Analysis (COBRA) is the ISR/T part of the ABS of systems. This system provides Airborne Mine Countermeasures (AMCM) capability and one system consists of two Airborne Payloads and one Post Mission Analysis Station. Under the umbrella of evolutionary acquisition, three increments of development are planned; Block I introduces a daytime, surface laid minefield and obstacle detection capability for the Beach Zone. Blocks II and III will incorporate technology being developed by 6.3.

S&T. Block II adds a surfzone and night (darkness) detection capability. Block III adds a buried mine detection capability and on-board Near-Real-Time processing of Multi Spectral Imagery data.

COBRA will be a modular payload architecture of and integrated with the MQ-8B Fire Scout Vertical Takeoff and Landing Unmanned Aerial Vehicle (VTUAV) and will serve as the "detect" mission module of the Littoral Combat Ship (LCS) Mine Warfare mission package, providing AMCM capability.

Precision Navigation/Virtual Marking (PN/M)- The navigation effort involves requirements development and program planning to choose the navigational upgrades for the Landing Craft, Air Cushion (LCAC) and Landing Craft, Utility (LCU), and Amphibious Assault Vehicle (AAV) to enable the craft to safely navigate the neutralized assault lanes. A system of virtual or physical lane marking is to be developed to guide the assault craft through the neutralized assault lanes. OPN will fund the CRAFTALTS to upgrade the navigation systems.

LCU Navigation Upgrade: Modernized the navigation system to enable safe transit through the breached lane.

LCAC Autopilot Upgrade: An integrated improvement to the LCAC (Service Life Extension Program (SLEP) navigation system for craft control that allows precise navigation and hovering within the breached lane. These software upgrades and backfits will occur during scheduled LCAC SLEPs.

AAV Navigation Upgrade : Modernize the navigation system to enable precise transit through the breached lane.

Command, Control, Computers, Communications and Intelligence (C4I) - System will tie all of the above systems together under an integrated ABS architecture and also tie in with the integrated Mine Warfare architecture.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
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	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> Product Development:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> CMS - Conduct Preliminary Design Review (PDR). Down selection of High Explosive (HE) alternate neutralizer and solid reactive material neutralizer at PDR, eliminated liquid reactive neutralizer candidates. Began CMS live dart testing with emphasis on aero-dynamics and structure. Conduct CMS Technical Reviews.</p> <p>COBRA - Began Blk I VTUAV Integration Flight Tests. COBRA BLK II Transition from ONR. Procure (5) Precision Navigation/Marking (PN/M) Systems to support AAV/Augmented Reality Virtual Common Operational Picture (ARVCOP) efforts. Begin COBRA Tactical Littoral Sensor (TLS) SBIR effort. Begin COBRA Post Mission Analysis (PMA) Algorithm and Graphical User Interface (GUI) Enhancements. Begin COBRA BLK I producibility and obsolescence effort.</p> <p><b>FY 2011 Plans:</b> CMS - Continue live dart/neutralizer testing with emphasis on aero-dynamics and structures. Begin CMS neutralizer lethality design and testing (100 darts).</p> <p>COBRA - Complete BLK I integration Flight Tests with VTUAV. Begin COBRA Blk II design and development capability.</p> <p>Precision Navigation/Marking (PN/M) - Continue evaluation/assessment of EDMs supporting PN/M efforts.</p> <p><b>FY 2012 Base Plans:</b> CMS - Continue the design and development and conduct CMS neutralizer formal down selection between high explosive (HE) neutralizer and solid reactive material neutralizer. Prepare for Critical Design Review (CDR).</p> <p>COBRA - Continue design and development of COBRA Block II capability.</p>	23.728 0	25.647 0	38.579 0	-	38.579 0
<p><b>Title:</b> Technical Support:</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b></p>	1.260 0	0.926 0	0.644 0	-	0.644 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>CMS/COBRA - Provide mine magazine inventory management and shipping, contract management and test/studies, C4I/Data Fusion. Provide technical/acquisition support and documentation (ILS, training, data, drawings).</p> <p><b>FY 2011 Plans:</b> CMS/COBRA - Provide mine magazine inventory management and shipping, contract management and test/studies, C4I/Data Fusion. Provide technical/acquisition support and documentation (ILS, training, data, drawings). Cobra achieve Blk II Milestone B decision.</p> <p><b>FY 2012 Base Plans:</b> CMS/COBRA - Provide mine magazine inventory management and shipping, contract management and test/studies, C4I/Data Fusion. Provide technical/acquisition support and documentation (ILS, training, data, drawings).</p>					
<p><b>Title:</b> Test and Evaluation:</p> <p align="right"><b>Articles:</b></p>	3.126 0	3.235 0	8.599 0	-	8.599 0
<p><b>FY 2010 Accomplishments:</b> CMS - Began Live dart aero-dynamics and structural testing.</p> <p>COBRA - Began Blk 1 Integration Flight Test. Began COBRA Blk I Tactical Littoral Sensor (TLS) test. Began JABS Live Mine Tests (Very Shallow Water (VSW) and Near Surface Mines).</p> <p>PN/M - Demonstrate the Precision Navigation and Marking design capability.</p> <p><b>FY 2011 Plans:</b> CMS - Begin CMS Lethality Testing in support of Neutralizer Down-Select between the two darts.</p> <p>PN/M - Continue to test the Precision Navigation and Marking design capability.</p> <p><b>FY 2012 Base Plans:</b> CMS - Continue CMS Lethality Testing in support of Neutralizer Down-Select between the two darts. Tests against different mines in different conditions to determine the final dart design and lethality.</p>					



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
COBRA - Conduct Blk I Initial Operational Test and Evaluation (IOT&E) and flight test on the VTUAV.					
<b>Title:</b> Management:	1.538	1.437	1.378	-	1.378
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b> Mine magazine inventory management and shipping, contract management and tests/studies, C4I/Data fusion.					
<b>FY 2011 Plans:</b> Mine magazine inventory management and shipping, contract management and tests/studies, C4I/Data fusion.					
<b>FY 2012 Base Plans:</b> Mine magazine inventory management and shipping, contract management and tests/studies, C4I/Data fusion.					
<b>Accomplishments/Planned Programs Subtotals</b>	29.652	31.245	49.200	-	49.200

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2624: <i>SHALLOW WATER MCM SHIP</i>	7.811	9.236	1.048	0.000	1.048	6.053	6.159	6.205	26.136	0.000	62.648
• OPN/1600: <i>LCS MODULES</i>	0.000	4.095	4.165	0.000	4.165	4.235	4.307	8.761	4.455	0.000	30.018
• WPN/4225: <i>AIRBORNE MCM</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.730	44.750	75.413	0.000	120.893

**D. Acquisition Strategy**

Countermine/Counter Obstacle (CM/CO) is a two phased approach, near term and far term solutions. The near term approach for CM/CO is JDAM Assault Breaching System (JABS) and ABS Tactical Decision Aid and this effort has been completed. The far term solution is CMS, which transitioned from ONR in 2nd QTR 07 followed by MS B decision in 3rd QTR 07 and SD&D contract in 4th QTR 08.

Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T) - COBRA Block I achieved MS C in 3rd QTR FY09. COBRA Block II technology will transfer from ONR and achieve MS B in 1st QTR FY10. COBRA Block III technology will transition in FY12 with a MS B decision scheduled for 4th QTR FY15.

Precision Navigation/Virtual Marking (PN/M) - The navigation upgrades for the Landing Craft, Air Cushion (LCAC) and Landing Craft, Utility (LCU) are in progress. AAV enhancements will be achieved through an ECP (PMA AAV (Marine Corps)) in 4th QTR FY10.

**E. Performance Metrics**

Successful COBRA integration, flight tests and Operational Assessment (OA) into the Vertical Take-off Unmanned Aerial Vehicle (VTUAV). CMS successful design analysis with the down selection of the dart and provide a near surface neutralization capability to the fleet.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Dev, COBRA	C/CPAF	NORTHRUP GRUMMAN:MELBOURNE, FL	108.593	4.669	Feb 2011	7.045	Nov 2011	-		7.045	0.000	120.307	
Primary Hardware Dev, CMS	C/CPAF	Boeing:St. Louis, MO	37.701	13.487	Feb 2011	22.255	Nov 2011	-		22.255	0.000	73.443	
Ancillary Hardware Dev, JABS	C/CPAF	Unknown:Unknown	9.222	-		3.214	Feb 2012	-		3.214	0.000	12.436	
Systems Engineering, COBRA	WR	NSWC, PC: PANAMA CITY, FL	17.283	3.577	Nov 2010	-		-		-	0.000	20.860	
Software Dev, COBRA	WR	NAVAIR:SAN DIEGO, CA	12.858	0.100	Nov 2010	-		-		-	0.000	12.958	
Systems Engineering, CMS	WR	NSWC, IH: INDIAN HEAD, MD	23.893	1.603	Nov 2010	1.703	Nov 2011	-		1.703	Continuing	Continuing	Continuing
Training Dev, COBRA	WR	NSWC, IH: NDIAN HEAD, MD	5.216	0.745	Nov 2010	0.845	Nov 2011	-		0.845	0.000	6.806	
Tooling	WR	NSWC, IH: NDIAN HEAD, MD	0.860	-		-		-		-	0.000	0.860	
ABS IPT/Test Assets/Proj Eng	WR	NSWC, IH: NDIAN HEAD, MD	6.478	0.317	Nov 2010	0.417	Nov 2011	-		0.417	0.000	7.212	
Precision Navigation & Marking	WR	NSWC, IH: NDIAN HEAD, MD	3.792	1.149	Nov 2010	3.100	Nov 2011	-		3.100	0.000	8.041	
<b>Subtotal</b>			225.896	25.647		38.579		-		38.579			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development Support Equipment	WR	NSWC, PC: PANAMA CITY, FL	14.952	0.662	Nov 2010	1.153	Nov 2011	-		1.153	0.000	16.767	
Software Development	WR	NSWC, PC: PANAMA CITY, FL	8.037	-		-		-		-	0.000	8.037	
Integrated Logistics Support	WR	NSWC, IH: NDIAN HEAD, MD	2.712	-		-		-		-	0.000	2.712	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Configuration Management	WR	NSWC, PC: PANAMA CITY, FL	3.744	-		-		-		-	0.000	3.744	
Technical Data	WR	NSWC, PC: PANAMA CITY, FL	2.588	-		-		-		-	0.000	2.588	
Studies & Analysis	WR	NSWC, PC: PANAMA CITY, FL	4.788	0.182	Nov 2010	0.225	Nov 2011	-		0.225	0.000	5.195	
GFE	WR	NSWC, PC: PANAMA CITY, FL	0.400	-		-		-		-	0.000	0.400	
<b>Subtotal</b>			37.221	0.844		1.378		-		1.378	0.000	39.443	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development Test & Evaluation	WR	NSWC, IH: NDIAN HEAD, MD	30.326	0.147	Nov 2010	6.207	Nov 2011	-		6.207	0.000	36.680	
Operational Test & Evaluation	WR	NSWC/ IH, PC: NDIAN HEAD, PANAMA CITY	8.655	-		-		-		-	0.000	8.655	
Tooling	WR	NSWC/ IH, PC: NDIAN HEAD, PANAMA CITY	0.700	-		-		-		-	0.000	0.700	
GFE	WR	NSWC/ IH, PC: NDIAN HEAD, PANAMA CITY	0.400	-		-		-		-	0.000	0.400	
Development Test	C/FP	NSWC PC: Panama City, FL	-	-		2.392	Nov 2011	-		2.392	0.000	2.392	
<b>Subtotal</b>			40.081	0.147		8.599		-		8.599	0.000	48.827	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Engineering Support	C/CPFF	CACI, Norhtrup Grumman:DC, FL	8.443	0.912	Nov 2010	0.100	Nov 2011	-		0.100	0.000	9.455	
Government Engineering Support	WR	NSWC, IH:NDIAN HEAD, MD	30.295	1.840	Nov 2010	0.220	Nov 2011	-		0.220	0.000	32.355	
Program Management Support	WR	NSWC/ IH, PC:NDIAN HEAD, PANAMA CITY	21.994	1.781	Nov 2010	0.250	Nov 2011	-		0.250	0.000	24.025	
Travel	WR	NAVSEA:WNY, DC	1.213	0.074	Nov 2010	0.074	Nov 2011	-		0.074	0.000	1.361	
Assessment/BTR	C/CPAF	VARIOUS:VARIOUS	1.434	-		-		-		-	0.000	1.434	
Acquisition Workforce	Various	VARIOUS:VARIOUS	0.211	-		-		-		-	0.000	0.211	
<b>Subtotal</b>			63.590	4.607		0.644		-		0.644	0.000	68.841	
<b>Project Cost Totals</b>			366.788	31.245		49.200		-		49.200			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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Assault Breaching System	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016											
	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								
<b>Acquisition Milestones</b>																																				
Milestones/ Decisions																																				
					COBRA BLK II MSB ●																LRIP DR ▲								COBRA BLK III MSB ●				FRP DR ▲			
<b>System Development</b>																																				
CMS	SD 6.4																																			
	Sys Design/ Platform Integration																																			
COBRA Block II SD&D	SD&D																																			
ISR/Navigation/C4I System Development	ISR/NAV/C4I S&D																																			
Reviews	PDR ▼												CDR ▼																							
<b>Test &amp; Evaluation</b>																																				
<b>Production Milestones</b>																																				
COBRA Block I Production (With Options)	BLK I (with options)																																			
<b>Deliveries</b>																																				

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 2131: <i>Assault Breaching System</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Assault Breaching System</b>				
Acquisition Milestones: CMS: PDR - Preliminary Design Review	2	2010	2	2010
Acquisition Milestones: CMS: CDR - Critical Design Review	2	2013	2	2013
Acquisition Milestones: COBRA: COBRA Block II Milestone B	2	2011	2	2011
Acquisition Milestones: COBRA: COBRA Block III Milestone B	4	2016	4	2016
Acquisition Milestones: COBRA: LRIP Decision Review	2	2011	2	2011
Acquisition Milestones: COBRA: FRP Decision Review	2	2013	2	2013
System Development: CMS: CMS System Development 6.4	1	2010	4	2016
System Development: CMS: CMS System Design/Platform Integration	1	2010	4	2016
System Development: COBRA Block II SD&D: COBRA Block II SD&D	4	2011	4	2016
System Development: ISR/Navigation/C4I System Development: ISR/Navigation/C4I System Development	1	2010	4	2016
Production Milestones: COBRA Block I Production (With Options): COBRA Block I Production (With Options)	2	2011	4	2015
Deliveries: COBRA: Schedule Detail	2	2012	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3123: <i>SMCM UUV</i>	15.030	12.732	17.821	-	17.821	21.533	11.151	2.484	2.587	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Surface Mine Countermeasure Unmanned Undersea Vehicle (SMCM UUV) procures Unmanned Underwater Vehicles to support dedicated mine countermeasure operations, including buried mine detection. Equipment includes vehicles and associated systems support equipment. Potential P3I candidates include communications upgrades, on-board sonar processing and target recognition, command and control improvements, and other smaller tasks.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> SMCM UUV LFBB</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> LFBB development continues in FY10.</p> <p><b>FY 2011 Plans:</b> Milestone B. Development Contract Award. Preliminary Design Review (PDR).</p> <p><b>FY 2012 Base Plans:</b> Critical Design Review and vehicle fabrication.</p>	13.619 0	12.132 0	17.221 0	-	17.221 0
<p><b>Title:</b> SMCM UOES</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> System Acceptance Test of SMCM UUV-2. Fleet and Homeland Defense exercises.</p> <p><b>FY 2011 Plans:</b> Fleet training. Continue support of fleet exercises.</p> <p><b>FY 2012 Base Plans:</b> Support fleet exercises.</p>	1.411 0	0.600 0	0.600 0	-	0.600 0
<b>Accomplishments/Planned Programs Subtotals</b>	15.030	12.732	17.821	-	17.821

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/2622: <i>Minesweeping Sys Replacement, LV079</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	29.021	29.602	0.000	58.623
• OPN/1600: <i>LCS MODULES, LM001</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.810	21.164	0.000	41.974

**D. Acquisition Strategy**

An acquisition program will be initiated in FY11 to develop Surface Mine Countermeasure Unmanned Undersea Vehicles (SMCM UUV) equipped with Low Frequency Broadband (LFBB) sonar that provides buried mine detection capability. Initial procurement of the SMCM UUV with LFBB begins in FY15.

**E. Performance Metrics**

Successful Milestone C in Q2 FY15.  
Reach Full Rate Production Decision in Q2 FY16.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
SMCM UOES Development	C/CPAF	BLUEFIN:CAMBRIDGE, MA	14.244	0.600	Dec 2010	0.600	Dec 2011	-		0.600	Continuing	Continuing	Continuing
SMCM UUV Development	C/CPAF	TBD:TBD	19.455	7.378	Mar 2011	12.279	Dec 2011	-		12.279	Continuing	Continuing	Continuing
Software Development	WR	NSWC, PC: PANAMA CITY, FL	0.805	-		-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			34.504	7.978		12.879		-		12.879			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Engineering Support 1	WR	NSWC, PC: PANAMA CITY, FL	6.286	2.313	Dec 2010	2.535	Dec 2011	-		2.535	Continuing	Continuing	Continuing
Engineering Support 2	WR	NUWC, Newport: NEWPORT, RI	1.602	0.813	Dec 2010	0.829	Dec 2011	-		0.829	Continuing	Continuing	Continuing
Engineering Support 3	WR	VARIOUS: VARIOUS	0.808	0.350	Dec 2010	0.543	Dec 2011	-		0.543	Continuing	Continuing	Continuing
<b>Subtotal</b>			8.696	3.476		3.907		-		3.907			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NOMWC: STENNIS, MI	0.313	0.143	Dec 2010	0.146	Dec 2011	-		0.146	Continuing	Continuing	Continuing
Government T&E Support	WR	VARIOUS: VARIOUS	0.775	0.210	Dec 2010	0.214	Dec 2011	-		0.214	Continuing	Continuing	Continuing
Test and Evaluation	WR	COMOPTEVFOR: NORFOLK, VA	0.141	0.125	Dec 2010	0.125	Dec 2011	-		0.125	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.229	0.478		0.485		-		0.485			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>				
Program Management Support	C/CPFF	VARIOUS:WASHINGTON, DC	0.793	0.750	Dec 2010	0.500	Dec 2011	-		0.500	Continuing	Continuing	Continuing	
Travel	WR	NAVSEA:WNY, DC	0.100	0.050	Nov 2010	0.050	Dec 2011	-		0.050	Continuing	Continuing	Continuing	
Acquisition Workforce	WR	VARIOUS:VARIOUS	0.047	-		-		-		-	0.000	0.047		
<b>Subtotal</b>			0.940	0.800		0.550		-		0.550				
<b>Project Cost Totals</b>			45.369	12.732		17.821		-		17.821				

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>
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SMCM UUV	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>SMCM UUV UOES</b>																												
Dual Frequency SAS Development	—————																											
Dual Freq SAS Fleet Experimentation					—————																							
<b>SMCM UUV Acquisition Program</b>																												
SMCM UUV Milestone B					▲ MS B																							
SMCM UUV Contract Award					▲																							
SMCM UUV/SMCM Development					—————																							
SMCM UUV Milestone C																	▲ MS C											
SMCM UUV LRIP																					—————							
SMCM UUV Full Rate Production Decision																									▲ FRPD			
SMCM UUV Full Rate Production																									—————			
P3I																									—————			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 3123: <i>SMCM UUV</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>SMCM UUV</b>				
SMCM UUV UOES: Dual Frequency SAS Development: Dual Frequency SAS Development	1	2010	1	2011
SMCM UUV UOES: Dual Freq SAS Fleet Experimentation: Dual Frequency SAS Fleet Experimentation	1	2011	4	2012
SMCM UUV Acquisition Program: SMCM UUV Milestone B: SMCM UUV Milestone B	2	2011	2	2011
SMCM UUV Acquisition Program: SMCM UUV Contract Award: SMCM UUV Contract Award	2	2011	2	2011
SMCM UUV Acquisition Program: SMCM UUV/SMCM Development: SMCM UUV/SMCM Development	2	2011	1	2015
SMCM UUV Acquisition Program: SMCM UUV Milestone C: SMCM UUV Milestone C	2	2015	2	2015
SMCM UUV Acquisition Program: SMCM UUV LRIP: SMCM UUV LRIP	2	2015	2	2016
SMCM UUV Acquisition Program: SMCM UUV Full Rate Production Decision: SMCM UUV Full Rate Production Decision	2	2016	2	2016
SMCM UUV Acquisition Program: SMCM UUV Full Rate Production: SMCM UUV Full Rate Production	3	2016	4	2016
SMCM UUV Acquisition Program: P3I: P3I	1	2015	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4025: <i>Expendable Mine Neutralization System</i>	1.245	4.200	-	-	-	-	-	-	-	0.000	5.445
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Expendable Mine Neutralization System (EMNS) is a replacement to the existing AN/SLQ-48 Mine Neutralization System (MNS). The current program replaces the MNS with EMNS on the 14 MCM Avenger Class Ships. EMNS will leverage off of on-going efforts in the Airborne Mine Countermeasures Program to develop an Airborne Mine Neutralization System (AMNS).

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> Hardware/Software Development</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continue hardware design and development to include launcher, control console, and MCM-1 Class ship integration. Modify software for use on an MCM-1 class ship. Integrate EMNS Engineering Development Model (EDM) aboard MCM-1 Class Ship. Provide test articles and technical support throughout EMNS development.</p>	0.407 0	-	-	-	-
<p><b>Title:</b> Engineering Development</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Develop logistics products, including training materials and interactive technical manual. Provide Engineering support, including review for product development and ship integration.</p> <p><b>FY 2011 Plans:</b> Develop logistics products, including training materials and interactive technical manuals. Provide engineering support, including review for product developments and ship integration.</p>	0.400 0	1.973 0	-	-	-
<p><b>Title:</b> Test Events</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> EMNS Contractor Testing. Complete CT</p> <p><b>FY 2011 Plans:</b></p>	0.262 0	1.832 0	-	-	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
EMNS developmental testing including environmental and shock testing, and safety testing. Develop test and evaluation master plan (TEMP) and test reports. Conduct DT.					
<b>Title:</b> Management	0.176	0.395	-	-	-
<b>Articles:</b>	0	0			
<b>FY 2010 Accomplishments:</b> Provide program management support and travel for EMNS.					
<b>FY 2011 Plans:</b> Provide program management support and travel for EMNS.					
<b>Accomplishments/Planned Programs Subtotals</b>	1.245	4.200	-	-	-

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2622: <i>MINESWEEPING SYS REPLACEMENT, LV076 (EMNS)</i>	0.000	12.432	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.432
• WPN/4225: <i>AIRBORNE MCM, am080 (EMNS)</i>	0.000	4.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.071

**D. Acquisition Strategy**  
Based on the approved Common Neutralizer Strategy, the Archerfish neutralizer will be integrated on the MCM-1 Avenger Class Ships. The acquisition strategy will be full and open competition for non-neutralizer hardware development and system integration with a directed contractual relationship with VCT (flight control software). The Navy awarded a sole source contract to BAE Systems for Common Neutralizer support, integration, and hardware manufacturing/delivery. All EMNS neutralizer equipment and support will be provided by BAE Systems to the Navy. The Navy will provide these assets as GFE to the integration contractor.

**E. Performance Metrics**  
Successfully complete DT FY11 and receive MS C approval in FY12.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop Technical and Aquisition Documentation	WR	NSWC, PC:Panama City, FL	2.056	-		-		-		-	0.000	2.056	
Hardware/Software Development	C/CPIF	Lockheed Martin:Syracuse, NY	10.185	-		-		-		-	0.000	10.185	
Common Neutralizer Development	C/CPIF	Raytheon:Portsmouth, RI	2.431	-		-		-		-	0.000	2.431	
Deep Water Neutralizer Development	WR	NSWC, PC:Panama City, FL	-	-		-		-		-	0.300	0.300	
Deep Water Neutralizer Development	C/CPIF	BAE Systems:UK	-	-		-		-		-	3.000	3.000	
<b>Subtotal</b>			14.672	-		-		-		-	3.300	17.972	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop Logistics Products	C/CPIF	Lockheed Martin:Syracuse, NY	2.641	0.437	Nov 2010	-		-		-	0.000	3.078	
Develop Logistics Products	WR	NSWC:Panama City, FL	0.966	0.236	Nov 2010	-		-		-	0.000	1.202	
Engineering Support	C/CPIF	Lockheed Martin:Syracuse, NY	2.674	0.548	Nov 2010	-		-		-	0.000	3.222	
Engineering Support	C/CPIF	NSWC:Panama City, FL	7.456	0.752	Nov 2010	-		-		-	0.000	8.208	
Deep Water Neutralizr ILS	C/CPIF	BAE Systems:UK	-	-		-		-		-	0.252	0.252	
Deep Water Neutralizr ILS	C/FP	NSWC, PC:Panama City, FL	-	-		-		-		-	0.186	0.186	
Deep Water Neutralizer Engineering	C/CPIF	BAE Systems:UK	-	-		-		-		-	2.200	2.200	
Deep Water Neutralizer Engineering	WR	NSWC, PC:Panama City, FL	-	-		-		-		-	0.860	0.860	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			13.737	1.973		-		-		-	3.498	19.208	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop TEMP	WR	NSWC, PC:Panama City, FL	0.100	-		-		-		-	0.000	0.100	
CT/DT	C/CPIF	Lockheed Martin:Syracuse, NY	1.272	0.500	Jan 2011	-		-		-	0.000	1.772	
CT/DT	WR	NSWC, PC:Panama City, FL	1.272	1.332	Jan 2011	-		-		-	0.000	2.604	
Operational Test & Evaluation	WR	COTF:Norfolk, VA	-	-		-		-		-	0.000	0.000	
Common Neutralizer Testing	C/CPIF	Raytheon:Portsmouth, RI	-	-		-		-		-	0.000	0.000	
Common Neutralizer Test Sets	C/CPIF	Raytheon:Portsmouth, RI	-	-		-		-		-	0.000	0.000	
Deep Water Neutralizer T&E	C/CPIF	BAE System:UK	-	-		-		-		-	0.995	0.995	
Deep Water Neutralizer T&E	WR	NSWC, PC:Panama City, FL	-	-		-		-		-	2.295	2.295	
<b>Subtotal</b>			2.644	1.832		-		-		-	3.290	7.766	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	CACI:Arlington, VA	1.316	0.355	Nov 2010	-		-		-	0.000	1.671	
Travel	WR	NAVSEA:Washington, DC	0.250	0.040	Nov 2010	-		-		-	0.000	0.290	
<b>Subtotal</b>			1.566	0.395		-		-		-	0.000	1.961	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>
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EMNS	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>																												
Milestones																												
<b>System Development</b>																												
Integration Development	Integration Development																											
<b>Test &amp; Evaluation</b>																												
Test Events		CT				DT																						
<b>Production Milestones</b>																												
<b>Deliveries</b>																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 4025: <i>Expendable Mine Neutralization System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>EMNS</b>				
Acquisition Milestones: Milestones: Milestone C	1	2012	1	2012
System Development: Integration Development: Integration Development	1	2010	4	2011
Test & Evaluation: Test Events: Contractor Testing CT	2	2010	2	2010
Test & Evaluation: Test Events: Developmental Testing DT	2	2011	2	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603502N: <i>Surface &amp; Shallow Water MCM</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	15.934	-	-	-	-	-	-	-	-	0.000	15.934
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional interest

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

	FY 2010	FY 2011
<b><i>Congressional Add:</i></b> RMS Prog - Cong	7.967	-
<b><i>FY 2010 Accomplishments:</i></b> Congressional Add to continue development of the Remote Minehunting System (RMS) during the RMS reliability growth program.		
<b><i>Congressional Add:</i></b> Persistent Autonomous Maritime Surveillance	4.979	-
<b><i>FY 2010 Accomplishments:</i></b> Congressional Add to develop prototype for a persistent maritime surveillance system, and demonstrate technology feasibility for fleet applications.		
<b><i>Congressional Add:</i></b> Mine Hunting Sonar Prog - Cong	2.988	-
<b><i>FY 2010 Accomplishments:</i></b> Congressional Add to upgrade AN/SQQ-32(V)3 Classification Sonar, and to provide detection transducer development, design and quality sonar operator equipment consoles applicable to High Frequency Wide Band.		
<b>Congressional Adds Subtotals</b>	15.934	-

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

N/A

**D. Acquisition Strategy**

Congressional add

**E. Performance Metrics**

Congressional add

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	57.922	57.796	118.764	-	118.764	83.739	20.727	52.210	51.804	Continuing	Continuing
0225: <i>Surface Ship Torpedo Defense (SSTD)</i>	47.964	57.796	118.764	-	118.764	83.739	20.727	52.210	51.804	Continuing	Continuing
9999: <i>Congressional Adds</i>	9.958	-	-	-	-	-	-	-	-	0.000	9.958

**A. Mission Description and Budget Item Justification**

The Surface Ship Torpedo Defense (SSTD), Project 0225, has changed as presented in the President's Budget FY 2011 submit. The previous program developed the Anti-Torpedo Torpedo Defensive System (ATTDS) for Cruisers and Destroyers. This program had a planned Initial Operating Capability (IOC) in 2015. The program will now focus on first providing torpedo defense capability to High Value Units (HVU).

The project now uses technologies developed under the previous ATTDS program to provide a detect-to-engage hardkill torpedo defense capability through two new development programs. The Countermeasure Anti-Torpedo (CAT) program develops a canisterized Anti-Torpedo Torpedo (ATT) as an ACAT II program. The Torpedo Warning System (TWS) develops the required ship systems as an ACAT III program. Like the previous ATTDS system, the new TWS system will require fielding of the AN/SLQ-25D (NIXIE) system as a tow point for the TWS towed sensors. This will require interfacing NIXIE power and data transfer with TWS.

The first increment of the TWS system will be installed on one CVN and one Combat Logistics Force (CLF) ship (both HVUs) with an IOC in FY 2017. The first increment of the CAT will be installed on HVUs in FY 2021.

Additionally, the program will develop and field two surface ship torpedo defense prototype systems (TWS/CAT) on two CVNs. To accomplish this effort, the department intends to request a FY 2011 prior approval reprogramming for approximately \$38 million. The effort will complete 33 months after funds are received.

At-sea demonstrations of the Torpedo Detection Classification and Localization (TDCL) systems conducted in FY06 through FY09 led to a CRUDES TDCL draft system specification in FY09 which is being modified to accommodate installation of a system for HVUs. Additionally, in 2nd Qtr FY10, prototype TDCL systems were tested at sea to collect data to characterize the ability of towed active and passive sonar arrays to detect and track threat targets both actively and passively in adverse conditions. System manufacturing readiness levels indicate FY17 as most acceptable risk for delivery.

At-sea testing of the Engineering Development Model (EDM-1) design of the anti-torpedo torpedo capability in FY06 through FY09 facilitates completion of the EDM-2 design in late FY11. Development and testing conducted by the Office of Naval Research (ONR) provided the required Technology Readiness level required for the CAT program to achieve a Milestone B.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>	PE 0603506N: <i>Surface Ship Torpedo Defense</i>
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	

A Performance specification for the AN/SLQ-25D system suitable for the HVU application was completed in FY10. Since the HVU does not use the Surface Vessel Torpedo Tubes (SVTT), the previous ATTDS efforts conducted to modify this system to accept the CAT have been terminated, and efforts have commenced with the planning yards for CVNs to establish locations and requirements for launcher systems appropriate to these ships.

FY10 Congressional Add-Project 10C096, AN/SLQ-25D Interface: Funding provides interoperability of the AN/SLQ-25D countermeasure system with the TWS. This interoperability requires development of interfaces with Fire Control systems, as well as interfaces with new towed sensors. This task has increased in scope as the HVU application increases the requirements placed on the towed sensors. This increase resulted in the program office's decision to compete the development of this capability. Award of the new competitive contract is expected in June 2011.

FY10 Congressional Add-Project 10C097, Continuous Active Sonar for Torpedo DCL Systems: Adapt Continuous Active Sonar (CAS) and other active and passive sonar technologies that have proved very effective for active Anti-Submarine Warfare (ASW) applications, to improve TDCL capabilities to extend coverage against most stressing emergent threats. The products of this Congressional Add could result in potential future increased capabilities for the CVN application.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	67.257	57.796	60.842	-	60.842
Current President's Budget	57.922	57.796	118.764	-	118.764
Total Adjustments	-9.335	-	57.922	-	57.922
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-7.790	-			
• SBIR/STTR Transfer	-1.365	-			
• Program Adjustments	-	-	59.023	-	59.023
• Section 219 Reprogramming	-0.179	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.101	-	-1.101
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

    Congressional Add: *AN/SLQ-25D Integration*

    Congressional Add: *Continuous Active Sonar for Torpedo DCL Systems*

	<b>FY 2010</b>	<b>FY 2011</b>
	6.373	-
	3.585	-
	9.958	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999		
Congressional Add Totals for all Projects	9.958	-

**Change Summary Explanation**

Technical and Schedule: Changed focus of program to HVU and added accelerated prototype SSTD effort for development and installation of (2) deployable TWS/CAT prototype systems for delivery in FY13.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0225: <i>Surface Ship Torpedo Defense (SSTD)</i>	47.964	57.796	118.764	-	118.764	83.739	20.727	52.210	51.804	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	2	0	0	0		

**A. Mission Description and Budget Item Justification**

The project uses technologies developed under the previous ATTDS program to provide a detect-to-engage hardkill torpedo defense capability. The Countermeasure Anti-Torpedo (CAT) program develops a canisterized Anti-Torpedo Torpedo (ATT) as an ACAT II program. The Torpedo Warning System (TWS) develops the required ship systems as an ACAT III program. Like the previous ATTDS system, the new TWS system will require fielding of the AN/SLQ-25D (NIXIE) system as a tow point for the TWS towed sensors. This will require interfacing NIXIE power and data transfer with TWS. The first increment of the TWS system will be installed on one CVN and one Combat Logistics Force (CLF) ship (both HVUs) with an IOC of FY 2017. The first increment of the CAT will be installed on HVUs in FY 2021.

Additionally, the program will develop and field two surface ship torpedo defense prototype systems (TWS/CAT) on two CVNs.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Countermeasure Anti-Torpedo (CAT) (previously (ATT)):	30.714	35.996	73.664
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Continued ATT EDM-2 detailed design and sub-system testing. Included procurement of long-lead materials and fabrication of EDM-1 components unaffected by the EDM-2 design. Conducted launch testing of Electric CAT vehicles (ECAT) to validate water entry performance across all ship speeds and launcher heights.			
<b>FY 2011 Plans:</b> Continue EDM-2 detailed design and subsystem testing. EDM-2 fabrication continues in support of subsystem land-based testing. Subsystem testing will support delivery of first technical data package. Procure All Up Round Equipment (AURE) and ATT warheads and Safe and Arm devices to support Insensitive Munitions testing. Conduct Weapons System Explosive Safety Review Board (WSESRB) review of the CAT program.			
<b>FY 2012 Plans:</b> Begin preparation of the CAT technical data package. Continue land based testing of EDM-2. Procure materials for prototype delivery in 33 months to include AURE and warhead. Begin fabrication of subsystems for EDM-2 prototype CATs in support of 33-month prototype delivery.			
<b>Title:</b> Torpedo Warning System (TWS) (previously SHIP SYSTEMS):	14.500	18.800	44.600



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>	0	0	0
<p><b><i>FY 2010 Accomplishments:</i></b> Conducted prototype Torpedo Detection Classification and Localization (TDCL) Array sea testing to determine the performance of the towed systems in the presence of other acoustic sources and during ship maneuvers. Collected data on hull mounted active sonar that will assist in developing a future hull mounted sonar for HVUs. Began development of a towed sensor specification for HVU application.</p> <p><b><i>FY 2011 Plans:</i></b> Complete design and build of towed sensor EDM and conduct lake testing for performance evaluation. Continue development of Torpedo Detection Classification and Localization (TDCL) algorithms. Commence design of fire control and CAT ready-stowage racks for the HVU application.</p> <p><b><i>FY 2012 Plans:</i></b> Continue fire control and CAT ready-stowage racks design and testing. Conduct sea test on sensors and algorithms developed in FY11. Begin fabrication of EDM prototype systems in support of 33-month prototype delivery.</p>			
<p><b><i>Title:</i></b> AN/SLQ-25D</p> <p style="text-align: right;"><b>Articles:</b></p>	2.750 0	3.000 0	0.500 0
<p><b><i>FY 2010 Accomplishments:</i></b> Completed AN/SLQ-25D performance specification. Developed combined Acquisition Strategy and Acquisition Plan in support of issuing an RFP for AN/SLQ-25D procurement.</p> <p><b><i>FY 2011 Plans:</i></b> Issue competitive contract for development and procurement of two AN/SLQ-25D systems to support FY14 testing of TWS systems.</p> <p><b><i>FY 2012 Plans:</i></b> Complete development of AN/SLQ-25D and Capability Design Review.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	47.964	57.796	118.764

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/221300: <i>Surface Ship Torpedo Defense</i>	10.153	2.206	2.257	0.000	2.257	10.742	19.763	23.964	24.596	0.000	211.881

**D. Acquisition Strategy**

CAT Program: Under the ATTDS program In FY09 and FY10, the CAT project completed a Systems Requirements Review (SRR) and Preliminary Design Review (PDR) on the second Engineering Development Model (EDM-2) design. The Applied Research Laboratory (ARL) is now preparing the detailed EDM-2 design. ARL will complete the EDM-2 design in FY11. A Critical Design Review (CDR) will be held after the design is complete. ARL will fabricate test articles and 20 additional EDM-2 CATS in support of the 33-month prototype fielding. Testing will begin in FY13 and continue through delivery of the prototype CATs. A complete Technical Data Package (TDP) will be prepared. With the shift in IOC to FY21, Milestone B is planned in FY14 with a Milestone C decision in late FY17. In late FY17 a competitive fixed price contract will be awarded to build Low Rate Initial Production (LRIP) units. These will support Operational Testing beginning in FY20 for an FY21 IOC.

TWS Program: In FY09 and FY10, a towed sensor system specification was developed and 2 sea tests were conducted on Navy destroyers that demonstrated the ability of three different passive sonar ranging techniques and demonstrated the benefit of new torpedo detection sonar waveforms. Data from these tests is being applied to the HVU application, and the sensor specification is being modified to meet the increased capability required for HVU ships. Development and production of the new sensors is being conducted by 3 Phoenix and Ultra Ocean Systems. A complete sensor set is planned for delivery in 1st QTR FY12 to support an at sea test in the 2nd or 3rd QTR FY12. At the same time, a ready-stowage rack, and fire control systems are being developed by NUWC and NSWC. All of these components will be brought together for integration in FY13. This integration will support fabrication and fielding of the 33-month prototype systems. Integration with the AN/SLQ-25D system is planned in FY14. This testing will inform a Milestone C decision in late FY14. In late FY14, a single competitive contract will be awarded for TWS LRIP systems to support Operational Testing on a CVN in FY17 and a FY17 IOC.

AN/SLQ-25D System: The AN/SLQ-25D system specification (cabinet, winch, tow cable, towed body) for integration with the previous ATTDS program was completed in 2nd QTR FY10. This specification was modified for integration with the TWS system for use on HVU ships. This specification will be used for a competitive contract award in FY11 to develop and build two AN/SLQ-25D systems. This contract will use FY11 RDT&E funding to accomplish the engineering development and FY10 OPN to build the systems. The first system will deliver in 4th QTR FY13 and will be installed on a CVN ship to support TWS testing. An option to the production contract will be awarded in FY14 to build additional AN/SLQ-25D systems to support future TWS installations.

**E. Performance Metrics**

- Torpedo Effectiveness for the CAT
- Torpedo Detection Classification and Localization (TDCL) False Alert Rate
- TDCL probability of correct classification
- TWS System Availability

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering	WR	NUWC:Newport, RI	23.811	3.800	Jan 2011	4.500	Nov 2011	-		4.500	Continuing	Continuing	Continuing
Systems Engineering ATT Dev.	C/CPFF	PSU/ARL:State College, PA	98.299	23.100	Nov 2010	48.800	Nov 2011	-		48.800	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	JHU/APL:Baltimore, MD	1.570	0.400	Feb 2011	0.400	Feb 2012	-		0.400	Continuing	Continuing	Continuing
Systems Engineering Warhead Dev.	WR	NSWC:Indian Head, MD	27.416	5.500	Nov 2010	12.100	Nov 2011	-		12.100	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC:Keyport, WA	12.580	2.800	Nov 2010	8.000	Nov 2011	-		8.000	Continuing	Continuing	Continuing
Systems Engineering TDCL	C/CPFF	Ultra:Braintree, MA	10.640	1.000	Feb 2011	5.000	Feb 2012	-		5.000	0.000	16.640	Continuing
Systems Engineering ATT	WR	ONR:Not Specified	1.305	-	Jan 2011	0.100	Jan 2012	-		0.100	Continuing	Continuing	Continuing
Systems Engineering TDCL	C/CPFF	AAC:Hauppauge, NY	3.830	-		-		-		-	0.000	3.830	Continuing
Systems Engineering	WR	OPTEVFOR:Norfolk, VA	0.593	0.150	Feb 2011	0.150	Feb 2012	-		0.150	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	ArgonST:Manassas, VA	0.800	-		-		-		-	0.000	0.800	Continuing
Systems Engineering TDCL	WR	NSWC:Dahlgren, VA	4.222	1.100	Dec 2010	2.000	Nov 2011	-		2.000	0.000	7.322	Continuing
Systems Engineering TDCL	WR	SPAWAR:San Diego, CA	0.300	1.000	Dec 2010	1.000	Dec 2011	-		1.000	0.000	2.300	Continuing
Systems Engineering	C/CPFF	UT/ARL:Not Specified	0.500	0.200	Feb 2011	0.250	Feb 2012	-		0.250	0.000	0.950	Continuing
Systems Engineering	C/CPFF	Alion:Bridgeport, CT	-	3.000	Jan 2011	3.784	Dec 2011	-		3.784	0.000	6.784	Continuing
Systems Engineering	WR	NUWC DET:Norfolk, VA	1.325	1.200	Jan 2011	2.300	Nov 2011	-		2.300	0.000	4.825	
Systems Development	C/CPFF	3 Phoenix:Fairfax, VA	3.160	8.100	Dec 2010	26.780	Dec 2011	-		26.780	0.000	38.040	Continuing
Integrated Logistic Spt	WR	NSWC Crane:Crane, IN	0.284	0.350	Feb 2011	0.350	Dec 2011	-		0.350	0.000	0.984	Continuing
Prototype Development	C/FFP	TBD:TBD	-	3.000	Sep 2011	0.500	Dec 2011	-		0.500	0.000	3.500	
<b>Subtotal</b>			190.635	54.700		116.014		-		116.014			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Earned Value Mgmt Spt	C/CPAF	Pioneer:Virigina	-	0.550	Jan 2011	0.250	Dec 2011	-		0.250	0.000	0.800	

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY

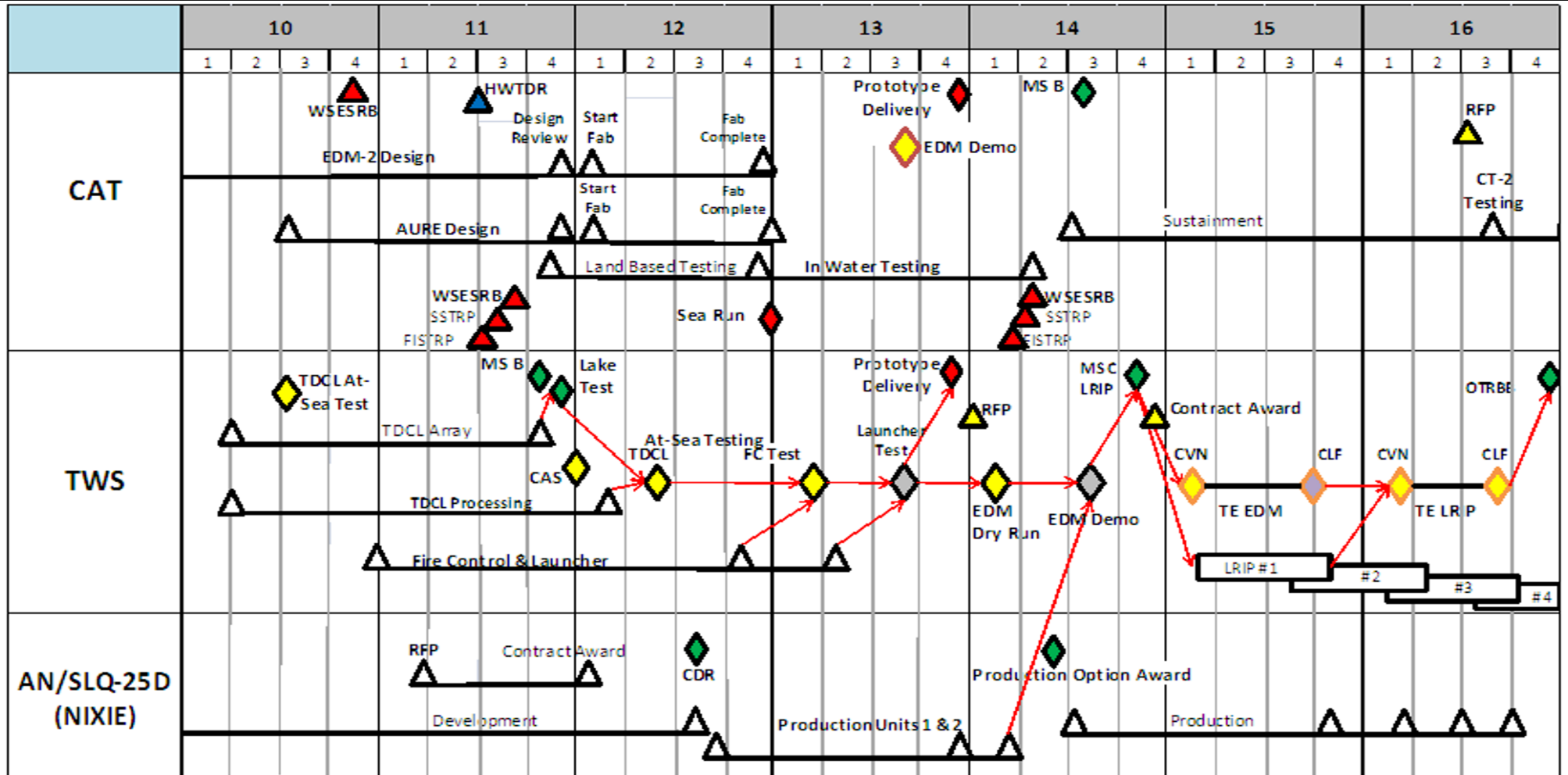
1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0603506N: Surface Ship Torpedo Defense

PROJECT

0225: Surface Ship Torpedo Defense (SSTD)



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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0225</b>				
AN/SLQ-25D (NIXIE) - DEVELOPMENT	1	2010	3	2012
AN/SLQ-25D - RFP	1	2011	1	2011
AN/SLQ-25D - CONTRACT AWARD	1	2012	1	2012
AN/SLQ-25D - CAPABILITY DESIGN REVIEW (CDR)	3	2012	3	2012
AN/SLQ-25D - PRODUCTION UNITS 1 & 2	3	2012	1	2014
AN/SLQ-25D - PRODUCTION OPTION AWARD	2	2014	2	2014
AN/SLQ-25D - PRODUCTION	3	2014	3	2016
TWS - TDCL ARRAY	2	2010	4	2011
TWS - TDCL PROCESSING	2	2010	1	2012
TWS - TDCL Sea Test 1	3	2010	3	2010
TWS - DESIGN & TEST FIRE CONTROL & LAUNCHER	1	2011	2	2013
TWS - MILESTONE B	4	2011	4	2011
TWS - LAKE TEST	4	2011	4	2011
TWS - CAS Developmental Test (DT)	1	2012	1	2012
TWS - TDCL SEA TEST 2	2	2012	2	2012
TWS - Prototype Delivery	4	2013	4	2013
TWS - RFP	1	2014	1	2014
TWS - EDM Demo	3	2014	3	2014
TWS - MILESTONE C	4	2014	4	2014
TWS - Contract Award	4	2014	4	2014
TWS - DT EDM	1	2015	1	2016

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 0225: <i>Surface Ship Torpedo Defense (SSTD)</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TWS - LRIP	1	2015	4	2016
TWS - OPERATIONAL TEST READINESS REVIEW (OTRR)	4	2016	4	2016
CAT - EDM-2 Design	1	2010	4	2011
CAT AURE Design	3	2010	4	2011
CAT - LAND BASED SYSTEM TEST	4	2011	4	2012
CAT - FABRICATE EDM-2 HARDWARE	1	2012	4	2012
CAT AURE FABRICATION	1	2012	4	2012
CAT - IN WATER TESTING	4	2012	2	2014
CAT - EDM Demo	3	2013	3	2013
CAT - Prototype Delivery	4	2013	4	2013
CAT Sustainment	3	2014	4	2016
CAT - MILESTONE B	3	2014	3	2014
CAT - RFP	3	2016	3	2016
CAT - Contractor Testing (CT) 2 In-Water Test	3	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603506N: <i>Surface Ship Torpedo Defense</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	9.958	-	-	-	-	-	-	-	-	0.000	9.958
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Adds

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

	FY 2010	FY 2011
<b><i>Congressional Add:</i></b> AN/SLQ-25D Integration	6.373	-
<b><i>FY 2010 Accomplishments:</i></b> Provide integration of the SLQ-25D countermeasure system with the Anti-Torpedo Torpedo Defense System. This integration includes development of interfaces with Ship's Sonar and Fire Control systems, as well as integration with new towed sensors and integration with the ship itself.		
<b><i>Congressional Add:</i></b> Continuous Active Sonar for Torpedo DCL Systems	3.585	-
<b><i>FY 2010 Accomplishments:</i></b> Adapt Continuous Active Sonar (CAS) and other active and passive sonar technologies that have proved very effective for active ASW applications, to improve Torpedo Detection, Classification, and Localization capabilities and extend ATTDS coverage against most stressing emergent threats.		
<b>Congressional Adds Subtotals</b>	9.958	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds



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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	171.441	93.830	54.072	-	54.072	47.867	46.291	47.837	48.723	Continuing	Continuing
2208: <i>CVN 21</i>	55.900	33.278	27.817	-	27.817	37.092	37.858	38.727	39.420	Continuing	Continuing
3216: <i>Tactical Support Center-Integration</i>	5.881	8.583	2.110	-	2.110	4.631	3.627	4.740	4.826	Continuing	Continuing
3217: <i>KU-Band Common Data Link</i>	13.930	-	-	-	-	-	-	-	-	0.000	13.930
4004: <i>EMALS</i>	91.011	50.341	22.418	-	22.418	4.403	3.026	2.549	2.621	Continuing	Continuing
4005: <i>Smart Carrier</i>	1.771	1.628	1.727	-	1.727	1.741	1.780	1.821	1.856	Continuing	Continuing
9999: <i>Congressional Adds</i>	2.948	-	-	-	-	-	-	-	-	0.000	2.948

**A. Mission Description and Budget Item Justification**

This Navy unique program addresses all technology areas associated with Navy/Marine Corps aircraft operations aboard ships. The program includes:

- (2208) - Development of ship hull, mechanical, propulsion, electrical, aviation, and combat support systems, subsystems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, and operational capabilities, and to meet the requirements of existing and pending regulations and statutes critical to the operation of existing and future aircraft carriers.
  
- (3216) - Development of block upgrades to the MH-60R sensor suite into the AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC). The CV-TSC provides increased situational awareness to the Carrier Strike Group (CSG) in support of force protection, primarily in the area of Anti Submarine Warfare (ASW). Through the integration of off-board sensors and signal, data and display processors, the AN/SQQ-34 is utilized in detecting, classifying, and localizing threats. An integrated element of the Carrier Combat System, the AN/SQQ-34 supports the tactical deployment of embarked ASW and Surface Warfare (SUW) assets (S-3B until retirement, SH-60F helicopter). This project provides the development and engineering foundation to refresh legacy AN/SQQ-34 systems on all Carriers and shore sites in support of Fleet introduction and shipboard integration of the MH-60R Multi Mission Helicopter. Upgrades to legacy systems enable the exchange of sensor, tactical and imagery data with the MH-60R initially, followed by incremental upgrades to support CVN air integration efforts.
  
- (3217) - Development of multi-mission shipboard high data rate Ku-Band data link between the embarked air assets and the Carrier Combat System, enabling the exchange of sensor, tactical and imagery data with the MH-60R Multi Mission Helicopter. It also provides capability for on-the-deck mission synchronization with MH-60R. Eventually, the Ku-Band data link will support other Ku-Band equipped aircraft, including the P-8 and Broad Area Maritime Surveillance (BAMS). This effort will provide the Carrier with the capability to support multiple aircraft simultaneously on different missions, and complete the Kill Chain by linking sensor platform to sensor controllers and the ASW/SUW Commanders. This project also establishes an ASW Line of Sight (LoS) network to enable continued combat operations in a satellite communications denied or degraded environment allowing for the exchange of tactical and raw sensor data in real time.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>
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- (4004) - Development of an advanced technology aircraft launch system in support of the CVN 78 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 78 Class ships. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability and reduced operator and maintainer workload.

- (4005) - The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs (TOC).

- (10C098) - Develop and validate a full scale composite aircraft carrier topside structure, providing a lightweight fragmentation/structural/fire integrated technology solution that can meet/exceed current performance requirements while reducing costs.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	175.823	93.830	65.502	-	65.502
Current President's Budget	171.441	93.830	54.072	-	54.072
Total Adjustments	-4.382	-	-11.430	-	-11.430
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.950	-			
• SBIR/STTR Transfer	-4.540	-			
• Program Adjustments	-	-	-9.986	-	-9.986
• Section 219 Reprogramming	-0.786	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.444	-	-1.444
• Congressional General Reductions Adjustments	-0.006	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Composite Mast for CVNs*

FY 2010	FY 2011
2.948	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>
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<b>Congressional Add Details (\$ in Millions, and Includes General Reductions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
Congressional Add Subtotals for Project: 9999	2.948	-
Congressional Add Totals for all Projects	2.948	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: FY 12 program (Project 2008) was adjusted to properly phase program requirements in accordance with expenditures.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2208: <i>CVN 21</i>	55.900	33.278	27.817	-	27.817	37.092	37.858	38.727	39.420	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project provides for the development of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project transitions the most promising technologies from the Navy technology base, other government laboratories, and the private sector into specific advanced development efforts. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to support CVN 78 procurement, including, but not limited to engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE).

FY 12 program was adjusted to properly phase program requirements in accordance with expenditures.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> CVN 21 Advanced Technology Design & Development	44.644	28.536	19.993
<b>Articles:</b>	0	0	0
<b>Description:</b> - CVN 21 Advanced Technology Design & Development: Continue development and transition of technologies to support CVN 21 Key Performance Parameters (KPPs): maintain sortie generation rate, reductions in manpower, and further recovery of weight and stability service life margins. Continue design activities to integrate the new technologies, such as the new propulsion plant and Electromagnetic Aircraft Launch System (EMALS) into the ship.			
<b>FY 2010 Accomplishments:</b> Technologies and design efforts include continuation of transition planning and execution, including finishing development work, certification / qualification testing, in-service testing, integrated logistics support, and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Efforts also encompass those tasks required to support CVN 78 procurement, including, but not limited to, engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE).			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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Technologies and design efforts include continuation of transition planning and execution, including finishing development work, certification / qualification testing, in-service testing, integrated logistics support, and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Efforts also encompass those tasks required to support CVN 78 procurement, including, but not limited to, engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE).

**FY 2012 Plans:**  
Funding is essential to technical data package development for the insertion of the latest technology and the development of critical systems and components. Technical data packages provide the plan during ship construction to support the delivery of key warfare and aviation systems necessary for ship certification. The development of key systems (such as Machinery Control and Monitoring System) are required for the safety and control of the warfare and key systems on the ship.

<b>Title:</b> CVN 21 - Test & Evaluation (T&E)	11.256	4.742	7.824
<b>Articles:</b>	0	0	0

**Description:** - CVN 21 - Test & Evaluation (T&E) -

**FY 2010 Accomplishments:**  
In agreement with COMOPTEVFOR, changed test period terminology from Developmental Test (DT) / Operational Tests (OT) to Integrated Test (IT). Some test events conducted during the IT periods will be mostly DT in nature (i.e., technical and performance compliance with specifications) with OT oversight to determine progression toward addressing effectiveness and suitability Critical Operational Issues (COIs); some test events conducted during the IT periods will be mostly OT in nature, with DT oversight to determine areas of improvement for follow-on ships; and some test events conducted during the IT periods will be truly IT tests, i.e., single test events that address the objectives of both DT and OT and the results are shared with both communities, so that they can conduct their independent assessments of the results. Continued execution of alternative to fulfill the requirements of the Full Ship Shock Trial (FSST). Continued collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&L, DASD(DT&E) and DOT&E to ensure requirements are met for planning of Post Delivery Tests and Trials (PDT&T). Continued to transition from a 5-part to a 4-part Test and Evaluation Management Plan (TEMP) 1610. Used baseline test schedule established by T&E team as the foundation for the development of TEMP 1610. Completed the first draft of DT portion of the 4-part TEMP 1610 for review. Continued development of the Overall Platform Integrated Test Schedule. Continued planning, executing, analyzing and improving the Integrated Strike Planning and Execution Model (ISPEM) and Sortie Generation Rate (SGR) Modeling and Simulation (M&S) improvements to the Virtual Carrier (VCVN) Model to ensure satisfaction of COMOPTEVFOR's Initial Operational Test and Evaluation (IOT&E) requirements. Conducted Sortie Generation Rate Assessment (SGRA) #9. Began development of SGR test strategy with COMOPTEVFOR and various stakeholders.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Continued Topside Electromagnetic Environmental Effects (E3) risk evaluation and testing. Conducted TEMP 1610 development and T&amp;E WIPT meetings.</p> <p><b>FY 2011 Plans:</b> Continue executing IT-1 test phase. Begin development of IT-1 Operational Assessment Report 1. Continue execution of alternative to fulfill the requirements of the FSST. Continue revising and updating the TEMP 1610 to Revision C, adding testing and resource definition to Part III and Part IV. Continue development and refinement of the Overall Platform Integrated Test Schedule and provide periodic updates to various stakeholders. Commence IT on WS, NAVAIR and C4I equipment and sensors to define and implement interoperability testing to support JITC certification. Continue collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&amp;L, DASD(DT&amp;E) and DOT&amp;E to ensure requirements are met for planning of PDT&amp;T. Continue planning, executing, analyzing and improving the ISPEM and SGR M&amp;S improvements to the VCVN Model to ensure satisfaction of COMOPTEVFOR's IOT&amp;E requirements. Conduct SGRA #10. Continue development of SGR test strategy with COMOPTEVFOR and various stakeholders. Continue Topside E3 risk evaluation and testing. Conduct TEMP 1610 development and T&amp;E WIPT meetings.</p> <p><b>FY 2012 Plans:</b> Continue executing IT-1 test phase. Complete IT-1 Operational Assessment Report 1. Continue execution of alternative to fulfill the requirements of the FSST. Begin defining entrance &amp; exit criteria for NAVSEA FSST Alternative FY13 Gate Review in order to receive approval to replace the traditional FSST with the alternative process for CVN 78. Obtain final approval of TEMP 1610 to support FY 12 Defense Acquisition Board Program Review (DAB PR) for CVN 79. Deliver the JITC draft Interoperability Certification Evaluation Plan (ICEP) for review. Continue collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&amp;L, DASD(DT&amp;E) and DOT&amp;E to ensure requirements are met for planning of PDT&amp;T. Continue planning, executing, analyzing and improving the ISPEM and SGR M&amp;S improvements to the VCVN Model to ensure satisfaction of COMOPTEVFOR's IOT&amp;E requirements. Continue development of SGR test strategy with COMOPTEVFOR and various stakeholders. Conduct T&amp;E WIPT meetings.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	55.900	33.278	27.817

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>			<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• BLI 200100: <i>Carrier Replacement Program</i>	1,219.927	2,639.569	554.798	0.000	554.798	1,942.385	2,148.395	3,545.752	2,503.034	Continuing	Continuing

**D. Acquisition Strategy**

The CVN 78 will be the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

**E. Performance Metrics**

Successfully complete Developmental Test - B2 (DT-B2) Net Ready / Interoperability Event. Successfully complete Operational Test - B3 (OT-B3). Successfully complete Operational Test (OT) Report. Successfully complete Operational Test Readiness Review (OTRR). Successfully conduct and support feasibility and tradeoff studies and data packages on new and modified shipboard systems, technologies and proposed modification. Data packages shall include information to support program decisions to integrate these efforts into the whole ship design efforts. Successfully conduct IDC shock testing and reporting in order to finalize IDC R&D efforts. Successfully complete Advanced Weapons Elevator Shock and Electromagnetic Interference (EMI) Test qualifications. Successfully complete Plasma Arc Waste Destruction System (PAWDS) Land-Based Test. Successfully create and deliver 21 Decision Memorandums (DM) for Bents/Bays 1-21 on the 03 Level (Gallery Deck) with Layer 31 information. This effort includes comment and adjudication for each ODWG delivered DM. Successfully develop the baseline Technical Data Packages for 39 systems and mature packages in preparation for final GFI arrival.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Propulsion Plant Development	SS/CPFF	Bettis:PA	71.627	-		-		-		-	0.000	71.627	
Propulsion Plant Development	C/CPFF	NGSB-NN:VA	164.409	-		-		-		-	0.000	164.409	
Propulsion Plant Development	Various	Miscellaneous:Various	10.562	-		-		-		-	0.000	10.562	
Propulsion Plant Development	WR	NSWC Carderock:MD	0.050	-		-		-		-	0.000	0.050	
Advanced Design & Development	C/CPAF	NGSB-NN:VA	152.916	10.097	Dec 2010	2.710	Oct 2011	-		2.710	0.000	165.723	
Advanced Design & Development	WR	NSWC Carderock:MD	72.802	0.029	Feb 2011	0.220	Oct 2011	-		0.220	0.000	73.051	
Advanced Design & Development	C/CPFF	SAIC:NM	49.313	0.144	Feb 2011	0.180	Nov 2011	-		0.180	0.000	49.637	
Advanced Design & Development	WR	NAWCAD Patuxent River:MD	46.069	4.596	Dec 2010	3.333	Oct 2011	-		3.333	0.000	53.998	
Advanced Design & Development	WR	NAWC Lakehurst:NJ	8.249	-		-		-		-	0.000	8.249	
Advanced Design & Development	WR	NSWC Dahlgren:VA	23.587	2.986	Feb 2011	3.428	Oct 2011	-		3.428	0.000	30.001	
Advanced Design & Development	C/CPAF	Raytheon:MA	27.487	5.309	Dec 2010	4.968	Dec 2011	-		4.968	0.000	37.764	
Advanced Design & Development	WR	NSWC Port Hueneme:CA	5.859	0.130	Feb 2011	-		-		-	0.000	5.989	
Advanced Design & Development	WR	SPAWAR:CA	9.995	0.485	Feb 2011	0.467	Oct 2011	-		0.467	0.000	10.947	
Advanced Design & Development	C/CPFF	NAVSEA Seaport:DC	31.216	4.578	Feb 2011	4.503	Dec 2011	-		4.503	0.000	40.297	
Advanced Design & Development	Various	Miscellaneous:Various	39.725	0.182	Feb 2011	0.184	Oct 2011	-		0.184	0.000	40.091	
<b>Subtotal</b>			713.866	28.536		19.993		-		19.993	0.000	762.395	



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF	NGSB-NN:VA	8.516	1.305	Dec 2010	1.350	Dec 2011	-		1.350	0.000	11.171	
Developmental Test & Evaluation	WR	NAWCAD Patuxent River:MD	15.248	1.579	Feb 2011	2.312	Oct 2011	-		2.312	0.000	19.139	
Developmental Test & Evaluation	WR	NSWC Dahlgren:VA	3.900	-		0.337	Oct 2011	-		0.337	0.000	4.237	
Developmental Test & Evaluation	WR	NSWC Carderock:MD	11.011	-		-		-		-	0.000	11.011	
Developmental Test & Evaluation	WR	SPAWAR:CA	3.239	-		0.410	Oct 2011	-		0.410	0.000	3.649	
Developmental Test & Evaluation	C/CPFF	NAVSEA SeaPort:DC	0.143	-		-		-		-	0.000	0.143	
Developmental Test & Evaluation	C/CPAF	Raytheon:Not Specified	1.283	0.725	Dec 2010	0.742	Dec 2011	-		0.742	0.000	2.750	
Developmental Test & Evaluation	Various	Miscellaneous:Various	7.932	0.615	Feb 2011	1.690	Oct 2011	-		1.690	0.000	10.237	
Operational Test & Evaluation	WR	COMOPTEVFOR:VA	5.114	0.518	Feb 2011	0.983	Oct 2011	-		0.983	0.000	6.615	
<b>Subtotal</b>			56.386	4.742		7.824		-		7.824	0.000	68.952	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWF	Various	Various:Various	0.275	-		-		-		-	0.000	0.275	
<b>Subtotal</b>			0.275	-		-		-		-	0.000	0.275	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		770.527	33.278	27.817	-	27.817	0.000	831.622

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016				
	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	
<b>Acquisition Milestones</b>								CVN 79 DAB PR △																					
Propulsion Plant																													
EMALS									SDD Complete △																				
Advanced Arresting Gear						Conf Review △			TRR 1 △			TRR 2 △																	
<b>Test &amp; Evaluation Milestones</b>												IT-1											IT-2					IT-3	
Integrated Test Phases	◇																											◇	
Developmental Test Reports												OAR1 (IT-1) △			OAR2 (IT-1) △												DT RPT (IT-2) △		
Operational Assessment Reports																DT RPT (IT-1) △											OAR (IT-2) △		
Assessment of Operational Test Readiness																OAR3 (IT-1) △											AOTR (C1) △		
Operational Test Readiness Review																												OTRR (C1) △	
<b>Contract Milestones</b>												CVN 80 IPPD Contract Award △																	
IPPD Contract																													
CP Contract												CVN 79 Construction Contract Award △																	
Construction Contract																		CVN 80 CP Contract Award △									CVN 78 Ship Delivery △		
Full Funding (SCN)																													

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2208</b>				
CVN 79 DAB PR	1	2012	1	2012
Propulsion Plant	1	2010	4	2016
EMALS SDD Complete	3	2012	3	2012
Advanced Arresting Gear (AAG) TRR 1 (IT)	4	2010	4	2010
AAG Config Review	1	2011	1	2011
AAG TRR 2 (IT)	2	2012	2	2012
Integrated Tests IT-1	1	2010	4	2014
Integrated Tests IT-2	4	2014	3	2016
Integrated Tests IT-3	3	2016	4	2016
Operational Assessment Report 1 (OAR1 IT-1)	2	2012	2	2012
Operational Assessment Report 2 (ORA2 IT-1)	3	2013	3	2013
Developmental Test Report (DP RPT IT-1)	1	2015	1	2015
Operational Assessment Report 3 (OAR3 IT-1)	1	2015	1	2015
Developmental Test Report (DT RPT IT-2)	4	2016	4	2016
Operational Assessment Report (OAR IT-2)	4	2016	4	2016
Assessment of Operational Test Readiness - Phase C1 (AOTR-C1)	4	2016	4	2016
Operational Test Readiness Review - Phase C1 (OTRR-C1)	4	2016	4	2016
CVN 80 IPPD Contract Award	1	2013	1	2013
CVN 79 Construction Contract Award	1	2013	1	2013
CVN 80 CP Contract Award	1	2015	1	2015
CVN 78 Ship Delivery	4	2015	4	2015

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 2208: <i>CVN 21</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CVN 79 SCN Full Funding	1	2013	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3216: <i>Tactical Support Center-Integration</i>	5.881	8.583	2.110	-	2.110	4.631	3.627	4.740	4.826	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The CV-TSC program provides increased situational awareness to the Carrier Strike Group (CSG) in support of force protection, primarily in the area of Anti-Submarine Warfare (ASW). Through the integration of off-board sensors and signal, data and display processors, the AN/SQQ-34 is utilized in detecting, classifying, and localizing threats. An integrated element of the Carrier Combat System, the AN/SQQ-34 supports the tactical deployment of embarked ASW and Surface Warfare (SUW) assets (S-3B until retirement, SH-60F helicopter). This project provides the design, development and engineering foundation to refresh legacy AN/SQQ-34 systems on all Carriers and shore sites in support of fleet introduction and shipboard integration of the MH-60R Multi Mission Helicopter. Upgrades to legacy systems enable the exchange of sensor, tactical and imagery data with the MH-60R initially, followed by incremental upgrades to support CVN air integration efforts.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> MH-60R Integration Development for CV-TSC	5.881	8.583	2.110
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
Completed development of the AN/SQQ-34(V)2 MH-60R Integration Increment 1 which establishes the initial link with the MH-60R through the Ku-Band Common Data Link System (CDL-S) and Aircraft Carrier Tactical Support Center (CV-TSC). Completed Critical Design Review (CDR) and detailed design documentation to support software development. Developed the software code baseline. Completed upgraded hardware design and built Engineering Development Model (EDM) units for development and environmental testing.			
Began development and certification of a CV-TSC software update to permit scenario training tracks to be shared between the Ship Self Defense System (SSDS) and CV-TSC. The efforts requires an update to the CV-TSC and SSDS interface requirements, design and implementation of the updated requirements into the AN/SQQ-34C(V)2 CV-TSC system baseline, and testing/certifying the update to the system and the interface.			
Began development of requirements and initiated design of AN/SQQ-34(V)2 Increment 2 which expands system capability to include support of multiple MH-60R and ship control of MH-60R sensors. Completed System Requirements Review (SRR) and System Functional Review (SFR) of Increment 2 baseline. Initiated high-level design efforts.			
<b>FY 2011 Plans:</b>			
Complete AN/SQQ-34(V)2 MH-60R Integration Increment 1 system verification and validation and Combat System Certification.			

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p>Complete detailed design work on AN/SQQ-34(V)2 MH-60R Integration Increment 2 and begin software code development. Complete Critical Design Review (CDR) and begin generating software code and test plan.</p> <p>Complete development and certification of a CV-TSC software update to permit scenario training tracks to be shared between the Ship Self Defense System (SSDS) and CV-TSC.</p> <p>Complete hardware/software development for a modification to the existing CDL system to support multiple MH-60R users with pre-flight and in-flight communication links within the Ku-Band. Investigate the technologies available for the next generation Ku-Band system that will support between two and four simultaneous users including MH-60R, BAMS, P-3s and other potential users. Begin development of Joint Capabilities Integration and Development (JCID) documentation to support those new user requirements.</p> <p>Start development of requirements for AN/SQQ-34(V)2 Increment 3 to include additional acoustic processing capabilities and shipboard integration of CDL capable aircraft.</p> <p><b><i>FY 2012 Plans:</i></b> Complete development of AN/SQQ-34(V)2 MH-60R Integration Increment 2. Complete software baseline and verification testing. Conduct Test Readiness Review (TRR) and Combat System certification.</p> <p>Complete requirements definition for development of AN/SQQ-34(V)2 Increment 3 and begin high-level design activities. Conduct a System Requirements Review (SRR) and a System Functional Review (SFR).</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	5.881	8.583	2.110

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2176: <i>Undersea Support Equipment (CV-TSC/CDL portion)</i>	20.530	19.866	19.740	0.000	19.740	8.390	0.351	0.367	0.408	Continuing	Continuing

**D. Acquisition Strategy**

The CV-TSC will be upgraded to support full deployments of Ku-Band equipped MH-60R aircraft. The CV-TSC development activity is a government field activity, Naval Undersea Warfare Center (NUWC), Division Keyport. Hardware procurements and back fit of the CV-TSC will use the AN/SQQ-34C as a baseline with additional

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603512N: <i>Carrier Systems Development</i>	3216: <i>Tactical Support Center-Integration</i>

hardware necessary for MH-60R support. Hardware shall be procured via a Request For Proposal (RFP) with industry. To the maximum extent possible, CV-TSC will use enterprise hardware initiatives being developed by the Navy in support of DDG-1000 and Aegis Modernization.

**E. Performance Metrics**

- Successfully complete Preliminary Design Review (PDR) and Critical Design Review (CDR) for MH-60R system upgrade.
- Utilize Commercial Off-The-Shelf (COTS) based Common Processor/Common Display Systems (CPS/CDS) to minimize Total Ownership Costs.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering / H/W & S/W Devel / Integration	WR	NUWC/Keyport:WA	5.331	4.378	Feb 2011	1.535	Oct 2011	-		1.535	Continuing	Continuing	Continuing
System Eng / S/W Development	C/CPFF	Adaptive Methods:VA	0.300	-		-		-		-	0.000	0.300	
System Eng / S/W Development	C/CPFF	JHU/APL:MD	0.250	-		-		-		-	0.000	0.250	
System Eng / S/W Development	WR	SPAWAR:CA	-	3.610	Feb 2011	-		-		-	0.000	3.610	
<b>Subtotal</b>			5.881	7.988		1.535		-		1.535			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Certification	WR	NUWC//Keyport:WA	-	0.500	Feb 2011	0.500	Oct 2011	-		0.500	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	0.500		0.500		-		0.500			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAE Systems:MD	-	0.095	Feb 2011	0.075	Dec 2011	-		0.075	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	0.095		0.075		-		0.075			

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			5.881	8.583		2.110		-		2.110			

**Remarks**

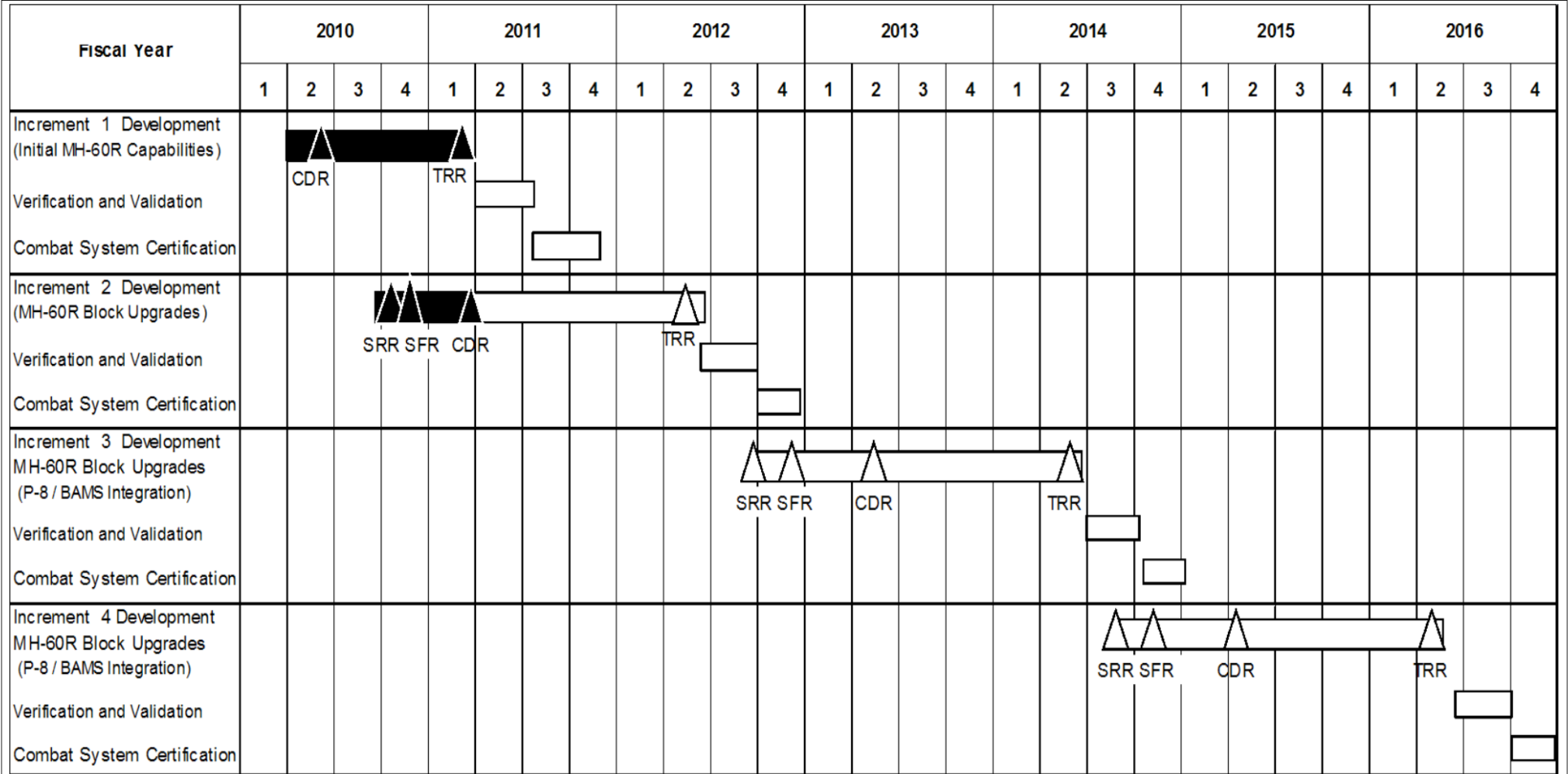
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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3216</b>				
Increment 1: Initial MH-60R Capabilities Development	2	2010	1	2011
Increment 1: Critical Design Review (CDR)	2	2010	2	2010
Increment 1: Test Readiness Review (TRR)	1	2011	1	2011
Increment 1: MH-60R Verification and Validation	2	2011	3	2011
Increment 1: MH-60R Combat System Certification	4	2011	4	2011
Increment 2: MH-60R Block Upgrades Development	3	2010	2	2012
Increment 2: System Requirements Review (SRR)	4	2010	4	2010
Increment 2: System Functional Review (SFR)	4	2010	4	2010
Increment 2: Critical Design Review (CDR)	1	2011	2	2011
Increment 2: Test Readiness Review (TRR)	2	2012	2	2012
Increment 2: MH-60R Verification and Validation	2	2012	3	2012
Increment 2: MH-60R Combat System Certification	3	2012	4	2012
Increment 3: MH-60R Block Upgrades (P-8/BAMS Integration)	3	2012	2	2014
Increment 3: System Requirements Review (SRR)	3	2012	4	2012
Increment 3: System Functional Review (SFR)	4	2012	4	2012
Increment 3: Critical Design Review (CDR)	2	2013	2	2013
Increment 3: Test Readiness Review (TRR)	2	2014	2	2014
Increment 3: Verification and Validation	3	2014	4	2014
Increment 3: Combat System Certification	4	2014	1	2015
Increment 4: MH-60R Block Upgrades (P-8/BAMS Integration)	3	2014	2	2016
Increment 4: System Requirements Review (SRR)	3	2014	3	2014

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3216: <i>Tactical Support Center-Integration</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Increment 4: System Functional Review (SFR)	4	2014	4	2014
Increment 4: Critical Design Review (CDR)	1	2015	2	2015
Increment 4: Test Readiness Review (TRR)	2	2016	2	2016
Increment 4: Verification and Validation	2	2016	3	2016
Increment 4: Combat System Certification	4	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3217: <i>KU-Band Common Data Link</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3217: <i>KU-Band Common Data Link</i>	13.930	-	-	-	-	-	-	-	-	0.000	13.930
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Develops a multi-mission, shipboard, high data rate Ku-Band data link between the embarked air assets and the Carrier Combat System, enabling the exchange of sensor, tactical and imagery data with the MH-60R Multi Mission Helicopter. It also provides capability for on-the-deck mission synchronization with MH-60R. Eventually, the Ku-Band data link will support other Ku-Band equipped aircraft, including the P-8 and Broad Area Maritime Surveillance (BAMS). This effort will provide the Carrier with the capability to support multiple simultaneous aircraft on different missions, also completing the Kill Chain by linking sensor platform to sensor controllers and the Anti-Submarine Warfare (ASW) and Surface Warfare (SUW) Commanders. This development effort will support the initial deployments of the Ku-Band equipped MH-60R Air Wing for new construction Carriers, Refueling Complex Overhauls (RCOH) Carriers, and NIMITZ Class back-fits.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Common Data Link Development	13.930	-	-
<b>Articles:</b>	0		
<b>FY 2010 Accomplishments:</b> Developed a Ku-Band data link between the embarked air assets and the Carrier Combat System. Established an ASW Line of Sight network to enable continued combat operations in a satellite communications denied or degraded environment allowing for the exchange of tactical and raw sensor data in real time.			
<b>Accomplishments/Planned Programs Subtotals</b>	13.930	-	-

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2176: <i>Undersea Support Equipment (CV-TSC/CDL Portion)</i>	20.530	19.866	19.740	0.000	19.740	8.390	0.351	0.367	0.408	Continuing	Continuing

**D. Acquisition Strategy**

The Ku-Band Common Data Link will be upgraded on the Carrier to support full deployments of Ku-Band equipped MH-60R aircraft. Procurements and back-fit of the Ku-Band capability will be fielded starting in FY11. SPAWAR Systems Center (SSC) shall develop the additional capabilities by implementing an Engineering Change Proposal (ECP) to the AN/USQ-167 Communications Data Link System (CDL-S). ECP implementation shall be procured via a Request For Proposal (RFP) with industry. This would ensure the most efficient and cost effective implementation for Navy.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 3217: <i>KU-Band Common Data Link</i>

**E. Performance Metrics**

- Increase capability from one (1) 360 degree aircraft link to four (4) simultaneous 360 degree aircraft links, while reducing overall manning.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4004: <i>EMALS</i>	91.011	50.341	22.418	-	22.418	4.403	3.026	2.549	2.621	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project provides for the development of an advanced technology aircraft launch system in support of the CVN 78 design and construction schedule, as well as Engineering and Life Cycle System (ELCS) design. The Electromagnetic Aircraft Launch System (EMALS) will be the aircraft catapult for CVN 78 Class ships. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability, and reduced operator and maintainer workload.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> EMALS	91.011	50.341	22.418
<b>Articles:</b>	0	0	0
<b>Description:</b> EMALS			
<b>FY 2010 Accomplishments:</b> (1) EMALS SDD Phase - Continued System Design and Development (SDD) Phase. Continued shipboard representative system development effort. Completed Highly Accelerated Life Test (HALT) and Environmental Testing. Performed System Functional Demonstration. Provided management, system engineering, test, and ship integration support. (2) EMALS Engineering and Life Cycle Support Development (E&LCSD) - Developed E&LCSD requirements. Provided technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
<b>FY 2011 Plans:</b> (1) EMALS SDD Phase - Continue shipboard representative system development effort. Continue testing and perform risk mitigation. Provide management, system engineering, test, and ship integration support. (2) EMALS E&LCSD - Award the E&LCSD Contract. Provide technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
<b>FY 2012 Plans:</b> (1) EMALS SDD Phase - Finalize shipboard representative system development effort. Finalize testing and perform risk mitigation. Provide management, system engineering, test, and ship integration support. (2) EMALS E&LCSD - Provide technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
<b>Accomplishments/Planned Programs Subtotals</b>	91.011	50.341	22.418

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BLI 200100: <i>Carrier Replacement Program</i>	1,219.927	2,639.569	554.798	0.000	554.798	1,942.385	2,148.395	3,545.752	2,503.034	Continuing	Continuing

**D. Acquisition Strategy**

The CVN 78 will be the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

**E. Performance Metrics**

Successfully complete Highly Accelerated Life Test (HALT) Phase II. Successfully complete System Functional Demonstration (SFD) testing. Successfully complete Environment Qualification Testing (EQT). Successfully complete Shipset Controls Lab testing.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Aircraft Launch, Recovery & Support	C/CPAF	Northrop Grumman:VA	86.673	-		-		-		-	0.000	86.673	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (PDRR):CA	82.719	-		-		-		-	0.000	82.719	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD):CA	348.786	33.504	Feb 2011	20.718	Dec 2011	-		20.718	12.599	415.607	408.301
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst:NJ	44.704	-		-		-		-	0.000	44.704	
Aircraft Launch, Recovery & Support	C/CPAF	NGSB-NN:VA	2.770	-		-		-		-	0.000	2.770	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD) - Award Fee:CA	13.149	1.104	May 2011	-		-		-	0.000	14.253	14.253
<b>Subtotal</b>			578.801	34.608		20.718		-		20.718	12.599	646.726	

**Remarks**  
A 36.9 million prior approval reprogramming action (FY 2007 funding) was approved in April 2008 and is included in Total Prior Year Cost.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst:NJ	56.613	15.733	Nov 2010	1.700	Dec 2011	-		1.700	0.000	74.046	
<b>Subtotal</b>			56.613	15.733		1.700		-		1.700	0.000	74.046	

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
DAWF	Various	Not Specified:Not Specified	0.299	-		-		-		-	0.000	0.299	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>Acquisition Milestones</b>								CVN 79 DAB PR △																				
Propulsion Plant																												
EMALS									SDD Complete △																			
Advanced Arresting Gear						Conf Review △			TRR 1 △				TRR 2 △															
<b>Test &amp; Evaluation Milestones</b>													IT-1												IT-2			
Integrated Test Phases	◇																											
Developmental Test Reports																												
Operational Assessment Reports									OAR1 (IT-1) △					OAR2 (IT-1) △							DT RPT (IT-1) △					DT RPT (IT-2) △		
Assessment of Operational Test Readiness																					OAR3 (IT-1) △					OAR (IT-2) △		
Operational Test Readiness Review																												
<b>Contract Milestones</b>																												
IPPD Contract																												
CP Contract																												
Construction Contract													CVN 80 IPPD Contract Award △											CVN 80 CP Contract Award △			CVN 78 Ship Delivery △	
Full Funding (SCN)																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4004</b>				
CVN 79 DAB PR	1	2012	1	2012
Propulsion Plant	1	2010	4	2016
EMALS SDD Complete	3	2012	3	2012
Advanced Arresting Gear (AAG) TRR 1 (IT)	4	2010	4	2010
AAG Config Review	1	2011	1	2011
AAG TRR 2 (IT)	2	2012	2	2012
Integrated Tests IT-1	1	2010	4	2014
Integrated Tests IT-2	4	2014	3	2016
Integrated Tests IT-3	3	2016	4	2016
Operational Assessment Report 1 (OAR1 IT-1)	2	2012	2	2012
Operational Assessment Report 2 (OAR2 IT-1)	3	2013	3	2013
Development Test Report (DT RPT IT-1)	1	2015	1	2015
Operational Assessment Report 3 (OAR3 IT-1)	1	2015	1	2015
Development Test Report (DT RPT IT-2)	4	2016	4	2016
Operational Assessment Report 1 (OAR IT-2)	4	2016	4	2016
Assessment of Operational Test Readiness - Phase C1 (AOTR-C1)	4	2016	4	2016
Operational Test Readiness Review - Phase C1 (OTRR-C1)	4	2016	4	2016
CVN 80 IPPD Contract Award	1	2013	1	2013
CVN 79 Construction Contract Award	1	2013	1	2013
CVN 80 CP Contract Award	1	2015	1	2015
CVN 78 Ship Delivery	4	2015	4	2015

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4004: <i>EMALS</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CVN 79 SCN Full Funding	1	2013	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4005: <i>Smart Carrier</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4005: <i>Smart Carrier</i>	1.771	1.628	1.727	-	1.727	1.741	1.780	1.821	1.856	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs. Initial technologies include the Ship Control System Governor Software Development, Tank Preservation, UPS Replacements, Advanced Damage Control System (ADCS), Damage Control Inventory Management and Stowage System (DCIMSS), and the Integrated Condition Assessment System. Demonstration technologies include Advanced Damage Control System (ADCS) software improvements, A/C Plant Model, IOC Replacement, Fleet Wireless PDA, Weapons Elevator Laser Positioning System, Legacy Steering Interface upgrades, CVN ITD location option evaluation tools, Antenna to Antenna coupling analysis tools. Wireless systems, smart sensors, lighting systems, knowledge-based systems, automated casualty control, automated technology for workload reduction, linked smart devices, common software tools for interoperability, and self-healing network are technologies being considered for future applications including the following: Smart Carrier HM&E to INS Network Connection, Underwater insulation system, Smart Carrier Sealed Industrial PCs, NCDS Packet Filtering Device, Network Data Logger Device, PCS proof of concept, SCS Onboard trainer, Universal PCCU.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Smart Carrier	1.771	1.628	1.727
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Fiscal Year 2010 efforts include liquid load management, advanced fire and smoke sensors, and Integrated Condition Assessment System software improvements, all via modifications and improvements to the existing Smart Carrier hardware and software suite.			
<b>FY 2011 Plans:</b> Fiscal Year 2011 plans include continuation of liquid load management, advanced fire and smoke sensors, and Integrated Condition Assessment System software improvements, all via modifications and improvements to the existing Smart Carrier hardware and software suite.			
<b>FY 2012 Plans:</b>			

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4005: <i>Smart Carrier</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Fiscal Year 2012 plans include support to Smart Carrier technologies. Modifications, upgrades and development of systems and software will be ongoing in support of In-Service aircraft carrier modernization initiatives.			
<b>Accomplishments/Planned Programs Subtotals</b>	1.771	1.628	1.727

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/ 0981: <i>Items Under \$5M (Smart Carrier (LT 140))</i>	15.566	16.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	31.891
• OPN/0981: <i>Items Under \$5M (Machinery Plant Upgrades (LT 160))</i>	0.000	0.000	5.410	0.000	5.410	5.911	15.811	9.501	13.589	0.000	50.222

**D. Acquisition Strategy**

Investigate, demonstrate, and implement available technologies to deliver a robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment to reduce workload, manpower requirements, and Total Ownership Costs (TOC).

**E. Performance Metrics**

Successfully complete Ship Control System Governor Software Development, AC Plant Model Capacity Optimization, UPS Replacements, ADCS Software Improvements (AFSSS/FCCS) Software Development Test, IOC replacement demonstration, Tank Preservation models, Weapons Elevator Laser Positioning demonstration, Legacy Steering Interface Upgrades, CVN ITD location option evaluation tool development, and Antenna to Antenna coupling analysis tool development.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4005: <i>Smart Carrier</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Ship Integration	WR	NAVSEA:Phil	0.965	0.147	Dec 2010	0.103	Nov 2011	-		0.103	0.000	1.215	
Ship Integration	WR	NAVSEA:Dahlgren	-	0.060	Dec 2010	0.090	Nov 2011	-		0.090	0.000	0.150	
<b>Subtotal</b>			0.965	0.207		0.193		-		0.193	0.000	1.365	

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Software Development	WR	NAVSEA:Phil	6.231	0.395	Dec 2010	0.340	Nov 2011	-		0.340	0.000	6.966	
Program Management Support	WR	NAVSEA:Phil	2.010	0.208	Dec 2010	0.190	Nov 2011	-		0.190	0.000	2.408	
Training Development	WR	NAVSEA:Phil	0.565	0.087	Dec 2010	0.093	Nov 2011	-		0.093	0.000	0.745	
Integrated Logistics Support	WR	NAVSEA:Phil	1.080	0.080	Dec 2010	0.068	Nov 2011	-		0.068	0.000	1.228	
Software Development	WR	NAVSEA:Dahlgren	-	0.115	Dec 2010	0.182	Nov 2011	-		0.182	0.000	0.297	
Program Management Support	WR	NAVSEA:Dahlgren	-	0.150	Dec 2010	0.185	Nov 2011	-		0.185	0.000	0.335	
<b>Subtotal</b>			9.886	1.035		1.058		-		1.058	0.000	11.979	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NAVSEA:Phil	3.356	0.336	Dec 2010	0.326	Nov 2011	-		0.326	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAVSEA:Dahlgren	-	0.050	Dec 2010	0.150	Nov 2011	-		0.150	0.000	0.200	
<b>Subtotal</b>			3.356	0.386		0.476		-		0.476			

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

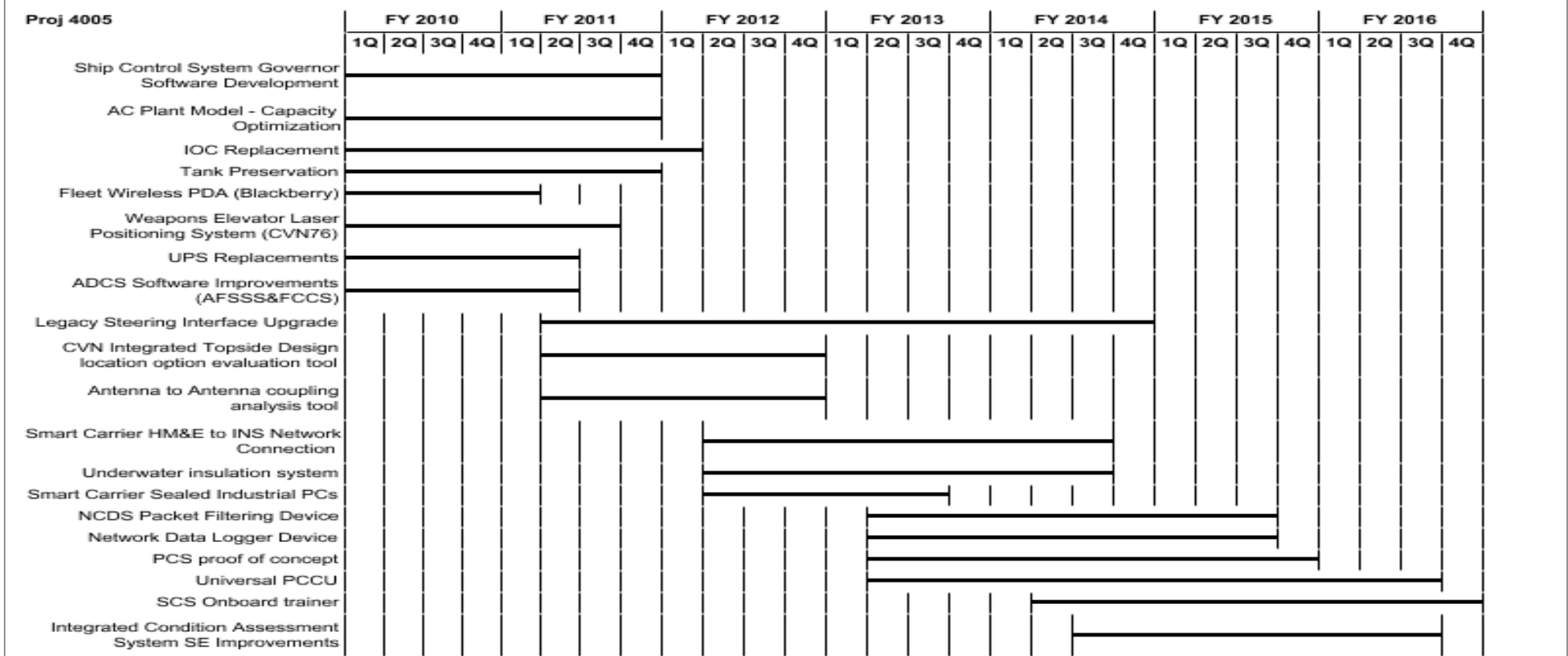
1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603512N: *Carrier Systems Development*

**PROJECT**

4005: *Smart Carrier*



2012PB - 0603512N - 4005

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4005: <i>Smart Carrier</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4005</b>				
Ship Control System Governor Software Development: Ship Control System Governor Software Development	1	2010	4	2011
AC Plant Model - Capacity Optimization: AC Plant Model - Capacity Optimization	1	2010	4	2011
IOC Replacement: IOC Replacement	1	2010	1	2012
Tank Preservation: Tank Preservation	1	2010	4	2011
Fleet Wireless PDA (Blackberry): Fleet Wireless PDA (Blackberry)	1	2010	1	2011
Weapons Elevator Laser Positioning System (CVN76): Weapons Elevator Laser Positioning System (CVN76)	1	2010	3	2011
UPS Replacements: UPS Replacements	1	2010	2	2011
ADCS Software Improvements (AFSSS&FCCS): ADCS Software Improvements (AFSSS&FCCS)	1	2010	2	2011
Legacy Steering Interface Upgrade: Legacy Steering Interface Upgrade	2	2011	4	2014
CVN Integrated Topside Design location option evaluation tool: CVN Integrated Topside Design location option evaluation tool	2	2011	4	2012
Antenna to Antenna coupling analysis tool: Antenna to Antenna coupling analysis tool	2	2011	4	2012
Smart Carrier HM&E to INS Network Connection: Smart Carrier HM&E to INS Network Connection	2	2012	3	2014
Underwater insulation system: Underwater insulation system	2	2012	3	2014
Smart Carrier Sealed Industrial PCs: Smart Carrier Sealed Industrial PCs	2	2012	3	2013
NCDS Packet Filtering Device: NCDS Packet Filtering Device	2	2013	3	2015
Network Data Logger Device: Network Data Logger Device	2	2013	3	2015
PCS proof of concept: PCS proof of concept	2	2013	4	2015

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 4005: <i>Smart Carrier</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Universal PCCU: Universal PCCU	2	2013	3	2016
SCS Onboard trainer: SCS Onboard trainer	2	2014	4	2016
Integrated Condition Assessment System SE Improvements: Integrated Condition Assessment System SE Improvements	3	2014	3	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603512N: <i>Carrier Systems Development</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	2.948	-	-	-	-	-	-	-	-	0.000	2.948
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Adds

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

<b><i>Congressional Add:</i></b> Composite Mast for CVNs	FY 2010	FY 2011
<b><i>FY 2010 Accomplishments:</i></b> Define the loads and design requirements specific to the mast using the CVN78 Ship Specifications. Review specifications and existing metallic/steel drawings for the CVN78 mast and ECM. Obtain input from the Structural Design, Electromagnetic (EM) Bonding, Grounding and Lightning, RCS, Outfitting, and Corrosion technical areas. Initiate global design.	2.948	-
<b>Congressional Adds Subtotals</b>	2.948	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	32.008	0.051	-	-	-	-	-	-	-	0.000	32.059
2469: <i>Open System Architecture (OSA)</i>	1.635	0.051	-	-	-	-	-	-	-	0.000	1.686
9999: <i>Congressional Adds</i>	30.373	-	-	-	-	-	-	-	-	0.000	30.373

**A. Mission Description and Budget Item Justification**

Funded the development of shipboard system components and technologies for the future surface combatant family of ships and focused on the following efforts: (1) development of specific and future surface combatant survivability and damage control/firefighting systems and features that reduce vulnerability against weapons, (2) implement modular standard open systems architecture at the total ship/system level and support reduced manning efforts through automation, (3) develop technologies to achieve a total integrated topside design focused on future surface ships, and (4) support the Integrated Power System effort that provides total ship electric power, including electric propulsion, power conversion and distribution, combat system and mission load interfaces to the electric power system.

All tasking will be completed for this project during FY 2011 and no other funding will be required going forward.

Project 9999 - Congressional Adds: Advanced Fuel Filtration System, Advanced Steam Turbine, High Shock 100 Amp Current Limiting Circuit Breaker, Integrated Condition Assessment and Reliability Engineering, IP Over Power Line Carrier Network Integration with ICAS, Propulsion Manufacturing Technology Development, Shipboard Wireless Maintenance Assistant, Fan Coil of the Future, Microdrive for Future HVAC Systems, Advanced Fluid Controls for Shipboard Applications, Integrated Power System Converter, and DDG-51 Hybrid Drive System.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	30.224	0.051	0.699	-	0.699
Current President's Budget	32.008	0.051	-	-	-
Total Adjustments	1.784	-	-0.699	-	-0.699
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.195	-			
• SBIR/STTR Transfer	-0.033	-			
• Program Adjustments	-	-	-0.699	-	-0.699
• Section 219 Reprogramming	-0.016	-	-	-	-
• Congressional General Reductions Adjustments	-0.012	-	-	-	-
• Congressional Add Adjustments	3.040	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

- Congressional Add: *Advanced Fuel Filtration System*
- Congressional Add: *Advanced Steam Turbine*
- Congressional Add: *High Shock 100 Amp Current Limiting Circuit Breaker*
- Congressional Add: *Integrated Condition Assessment and Reliability Engineering*
- Congressional Add: *IP Over Power Line Carrier Network Integration with ICAS*
- Congressional Add: *Propulsion Manufacturing Technology Development*
- Congressional Add: *Shipboard Wireless Maintenance Assistant*
- Congressional Add: *Fan Coil of the Future*
- Congressional Add: *Microdrive for Future HVAC Systems*
- Congressional Add: *Adv Fluid Controls For Shipboard Applications*
- Congressional Add: *Integrated Power System Converter*
- Congressional Add: *DG-51 Hybrid Drive System*

	<b>FY 2010</b>	<b>FY 2011</b>
	1.195	-
	3.983	-
	0.598	-
	0.797	-
	1.593	-
	3.744	-
	1.195	-
	2.709	-
	1.912	-
	2.988	-
	1.593	-
	8.066	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>
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<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999	30.373	-
Congressional Add Totals for all Projects	30.373	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>	<b>PROJECT</b> 2469: <i>Open System Architecture (OSA)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2469: <i>Open System Architecture (OSA)</i>	1.635	0.051	-	-	-	-	-	-	-	0.000	1.686
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Architectures, Interfaces & Modular Systems (AIMS) support implementation of Modular Standard Open Systems architecture (MOSA) at the total system/ship level. These modular interfaces facilitate mission and market adaptability, technology refresh and insertion, and competition. This funding supports the market surveillance and technology and other projections, cost and logistics analyses, process development, industry partnering, demonstrations and assessments necessary to translate into total ship acquisition.

All tasking will be completed for this project during FY121 and no other funding will be required going forward.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Total Open Shipboard Applications and Concepts</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.</p> <p><b>FY 2010 Accomplishments:</b> Developed total ship modularity and open system concepts to include Hull, Mechanical &amp; Electrical systems. Determined the feasibility of total ship solutions and recommended technologies and concepts. Identified common interfaces and potential applications, based on historical Fleet data, for cross-platform use.</p> <p><b>FY 2011 Plans:</b> Complete all efforts associated with Total Ship interface standards development and implementation.</p>	0.678 0	0.051 0	- -
<p><b>Title:</b> Open Sensors Zone</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.</p> <p><b>FY 2010 Accomplishments:</b></p>	0.537 0	- -	- -



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>	<b>PROJECT</b> 2469: <i>Open System Architecture (OSA)</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
Identified sensor systems, and their support systems within the sensors zone, for modularity applications and open systems/ interface development from an Hull, Mechanical & Electrical perspective. Included structural and installation considerations in the analysis.			
<b>Title:</b> Open Machinery Zone			
<b>Articles:</b>		0.213	-
<b>Description:</b> Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.		0	
<b>FY 2010 Accomplishments:</b> Identified machinery systems and components for modularity and open system applications. Determined the effect on the total ship for open machinery zones and interfaces/access routes needed for design and installation.			
<b>Title:</b> Open Weapons/Power Projection Zone			
<b>Articles:</b>		0.207	-
<b>Description:</b> Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.		0	
<b>FY 2010 Accomplishments:</b> Identified aspects of modular weapons, and the impact on the ship, for installation. Identified needed structure, interfaces, and installation procedures for weapon modules.			
<b>Accomplishments/Planned Programs Subtotals</b>		1.635	0.051
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>D. Acquisition Strategy</b>			
Not Applicable			
<b>E. Performance Metrics</b>			
Quarterly Program Reviews			

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	30.373	-	-	-	-	-	-	-	-	0.000	30.373
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project 9999 - Congressional Adds: Advanced Fuel Filtration System, Advanced Steam Turbine, High Shock 100 Amp Current Limiting Circuit Breaker, Integrated Condition Assessment and Reliability Engineering, IP Over Power Line Carrier Network Integration with ICAS, Propulsion Manufacturing Technology Development, Shipboard Wireless Maintenance Assistant, Fan Coil of the Future, Microdrive for Future HVAC Systems, Advanced Fluid Controls for Shipboard Applications, Integrated Power System Converter, and DDG-51 Hybrid Drive System.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Advanced Fuel Filtration System <b>FY 2010 Accomplishments:</b> Funding supported the development of the Advanced Fuel Filtration (AFF) system.	1.195	-
<b>Congressional Add:</b> Advanced Steam Turbine <b>FY 2010 Accomplishments:</b> Funds supported the continued engineering, technical services, manufacturing and testing indicated for the Advanced Steam Turbine (AST) Project.	3.983	-
<b>Congressional Add:</b> High Shock 100 Amp Current Limiting Circuit Breaker <b>FY 2010 Accomplishments:</b> Funding supported the development of a new 100 amp breaker that will complete a family of current limiting AQB circuit breakers used in electrical distribution systems onboard Navy combatant vessels.	0.598	-
<b>Congressional Add:</b> Integrated Condition Assessment and Reliability Engineering <b>FY 2010 Accomplishments:</b> Funding supported the Integrated Condition Assessment and Reliability Engineering with Integrated Condition Assessment System (ICAS) efforts. The Integrated Condition Assessment & Reliability Engineering (ICARE) project delivers a predictive capability for the Navy to forecast maintenance problems for critical shipboard equipment and enable advance maintenance and logistics decision making.	0.797	-
<b>Congressional Add:</b> IP Over Power Line Carrier Network Integration with ICAS <b>FY 2010 Accomplishments:</b> Funding supported IP Over Power Line Carrier Network Integration with Integrated Condition Assessment System (ICAS) efforts. Utilizing Internet Protocol over Power Line Carrier technology, the	1.593	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
concept of Affordable Flexible Controls Network (AFCN) will provide for the necessary network infrastructure for the rapid movement of data and video to ICAS.		
<b>Congressional Add:</b> Propulsion Manufacturing Technology Development <b>FY 2010 Accomplishments:</b> Funding supported proving the benefits of Nickel Boron (NiB) coating in large scale naval propulsion equipment applications.	3.744	-
<b>Congressional Add:</b> Shipboard Wireless Maintenance Assistant <b>FY 2010 Accomplishments:</b> Funding supported rugged, handheld wireless device providing information to maintenance personnel as part of the Navy's Smart Ship Program.	1.195	-
<b>Congressional Add:</b> Fan Coil of the Future <b>FY 2010 Accomplishments:</b> Funding provided to develop a revolutionary new prototype HVAC System for Future Surface Combatants consisting of a Fan Coil Assembly (FCA) utilizing state-of-the-art aerodynamic and permanent magnet technology, which is lightweight and reduced in size. The fan coil assembly shall be a complete assembly that contains all components necessary for providing cooling and air recirculation required to satisfy compartment environmental design conditions.	2.709	-
<b>Congressional Add:</b> Microdrive for Future HVAC Systems <b>FY 2010 Accomplishments:</b> Funding provided to develop a new family of variable speed drives that are efficient, quiet, utilizing state-of-the-art silicon carbide technology, which are lightweight and reduced size. The primary objective of this initial funding is to design and develop a prototype variable speed drive, preferably in the 10 horsepower size range to evaluate different topologies to optimize overall design for a shipboard environment.	1.912	-
<b>Congressional Add:</b> Adv Fluid Controls For Shipboard Applications <b>FY 2010 Accomplishments:</b> Funding provided to continue development and verification of an automated fluid system applicable to the Vertical Launching System (VLS) Deluge System. This system will have reduced weight, higher reliability and will require less manning than the current system. Marotta will provide two (2) in-line composite valves, two (2) controllers, and two (2) back-up power supplies, for Navy system testing. The testing efforts will yield a completely qualified system design.	2.988	-
<b>Congressional Add:</b> Integrated Power System Converter	1.593	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603513N: <i>Shipboard Sys Component Dev</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b><i>FY 2010 Accomplishments:</i></b> Funding provided to continue the development of the integrated power system propulsion motor drive power electronics technologies for future surface combatants that allows for rapid response to electrical system load demands.		
<b><i>Congressional Add:</i></b> DG-51 Hybrid Drive System	8.066	-
<b><i>FY 2010 Accomplishments:</i></b> Funding provided to continue development efforts in support of the DDG-51 Hybrid Drive System.		
<b>Congressional Adds Subtotals</b>	30.373	-

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

N/A

**D. Acquisition Strategy**

Congressional Adds

**E. Performance Metrics**

Congressional Adds

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	1.325	1.358	1.338	-	1.338	0.823	0.850	0.886	0.913	Continuing	Continuing
1830: <i>RADIAC Development</i>	1.325	1.358	1.338	-	1.338	0.823	0.850	0.886	0.913	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Mission: The Radiation Detection, Indication and Computation (RADIAC) Program is responsible for providing radiation monitoring instruments that detect and measure radiation in accordance with the provisions of Title 10 of the Code of Federal Regulations (10CFR). These instruments are used on all Navy, Coast Guard and Military Sealift Command vessels afloat and at every shore installation in order to ensure the safety of personnel and the environment. RADIACs are also required after an act of terrorism or war involving radiological or nuclear materials in order to enable continuity of warfighting ability.

Justification: Many RADIAC instruments and dosimetry systems are decades old and approaching the end of their useful lives. In some cases the equipment and replacement parts are no longer manufactured, making the equipment logistically unsupportable. In other cases, increasing failure rates due to age make replacements an economic efficiency improvement. In all cases a technology refresh will make both economic sense and provide increased operational capabilities. Naval Nuclear Propulsion Program (NNPP): Instruments are developed to support the safe operation and maintenance of nuclear powered vessels and at nuclear maintenance facilities.

Non-NNPP: Instruments are developed to support other than NNPP end users, such as Explosive Ordnance Disposal, Weapons, Medical, Industrial Radiography and Training.

Visit, Board, Search & Seizure (VBSS): The Navy has been tasked to intercept and board vessels at sea to search for nuclear or radiological materials that could be used for terrorist attacks. These instruments would have different characteristics than those used for NNPP and non-NNPP purposes and prototypes must be developed and/or tested and evaluated.

The AN/PDR-65 Ship Board Monitoring System is obsolete and will be replaced. The IM-239/WDQ Air Particle Detector (APD) and the HD-732, HD-1150 and HD-1151 Air Particle Samplers (APS) are obsolete and will be replaced.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	1.366	1.358	1.439	-	1.439
Current President's Budget	1.325	1.358	1.338	-	1.338
Total Adjustments	-0.041	-	-0.101	-	-0.101
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.038	-			
• Program Adjustments	-	-	-0.071	-	-0.071
• Section 219 Reprogramming	-0.003	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.030	-	-0.030

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1830: <i>RADIAC Development</i>	1.325	1.358	1.338	-	1.338	0.823	0.850	0.886	0.913	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Mission: The Radiation Detection, Indication and Computation (RADIAC) Program is responsible for providing radiation monitoring instruments that detect and measure radiation in accordance with the provisions of Title 10 of the Code of Federal Regulations (10CFR). These instruments are used on all vessels afloat and at every shore installation in order to ensure the safety of personnel and the environment. RADIACs are also required after an act of terrorism or war that involves nuclear material in order to enable continuing warfighting ability.

Justification: Many RADIAC instruments and dosimetry systems are decades old and approaching the end of their useful lives. In some cases the equipment and replacement parts are no longer manufactured, making the equipment logistically unsupportable. In other cases increasing failure rates due to age make replacements an economic efficiency improvement. In all cases a technology refresh will make both economic sense and provide increased operational capabilities.

Naval Nuclear Propulsion Program (NNPP): Instruments are developed to support the safe operation and maintenance of nuclear powered vessels and at nuclear maintenance facilities.

Non-NNPP: Instruments are developed to support other than NNPP end users, such as Explosive Ordnance Disposal, Weapons, Medical, Industrial Radiography and Training.

Visit, Board, Search & Seizure (VBSS): The Navy has been tasked to intercept and board vessels at sea to search for nuclear or radiological materials that could be used for terrorist attacks. These instruments would have different characteristics than those used for NNPP and non-NNPP purposes and prototypes must be developed and/or tested and evaluated.

The AN/PDR-65 Ship Board Monitoring System is obsolete and will be replaced. The IM-239/WDQ Air Particle Detector (APD) and the HD-732, HD-1150 and HD-1151 Air Particle Samplers (APS) are obsolete and will be replaced.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Naval Academy Midshipman Summer Internship	0.015	0.015	0.015
<b>Articles:</b>	0	0	0
<b>Description:</b> Every summer a Midshipman is selected to conduct laboratory studies in support of the Naval Dosimetry System to research various responses and issues with thermoluminescent dosimetry. Funds pay for materials.			
<b>FY 2010 Accomplishments:</b> Accomplished study assigned by Naval Academy instructor.			
<b>FY 2011 Plans:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Accomplish study assigned by Naval Academy instructor.				
<b>FY 2012 Plans:</b> Accomplish study assigned by Naval Academy instructor.				
<b>Title:</b> Next Generation Air Particle Detector		0.895	0.755	0.504
		3	4	0
<b>Articles:</b>				
<b>Description:</b> The IM-239/WDQ Air Particle Detector (APD) is a 400-pound piece of installed equipment on nuclear powered ships that monitors emissions into the air from the ships' nuclear power plants. There are six on each Nimitz class carrier and three on each submarine of all classes. The current version is approximately 30 years old and despite component upgrades, has reached the end of its useful life due to parts and technological obsolescence. Naval Reactors require a new version for the nuclear fleet. The RADIAC Program is working with the pre-eminent facility in this field in the U.S., the DoE Remote Sensing Laboratory at Nellis AFB, NV, to develop the new version.				
<b>FY 2010 Accomplishments:</b> Completed final three prototypes and issue them to Nuclear Propulsion Test Units for T&E.				
<b>FY 2011 Plans:</b> Based on T&E results, issue final specifications and solicit vendors to build prototypes and provide cost estimates for full production. Artifact quantities is an estimate that will be dependent upon the number of offerors, and/or the number of prototypes they propose to build.				
<b>FY 2012 Plans:</b> Select the winning prototype and prepare final specifications prior to production.				
<b>Title:</b> Naval Nuclear Propulsion Program (NNPP) Survey Meter		-	0.031	0.022
			3	0
<b>Articles:</b>				
<b>Description:</b> A survey meter for NNPP must meet military specifications for shipboard use, to include high tolerances for exposure to characteristics such as shock, temperature, humidity and sea water. COTS survey meters, which in most cases might be adequate in the mentioned environmental regards for shore-based requirements, cannot meet military requirements. COTS equipment is evaluated for compliance with technical specifications, and for potential hardening for shipboard use.				
<b>FY 2011 Plans:</b> Solicit vendor prototypes for T&E.				
<b>FY 2012 Plans:</b>				



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Test and evaluate commercial prototypes for suitability for Navy use.				
<b>Title:</b> Electronic Personal Dosimeter (EPD) Telemetry				
<b>Articles:</b>		0.139 5	0.054 0	0.045 0
<b>Description:</b> Naval Reactors has requested the study of adding capabilities to the newly fielded Electronic Pocket Dosimeter (EPD). Besides its basic functionality for recording dose exposure, this instrument also has the ability to remotely monitor and report the radiation exposure of on-scene emergency responders. This feature has not been implemented in the Navy EPDs that were recently procured and fielded, but the USAF already makes extensive use of the same EPD, along with the extra hardware and software required for the purpose of keeping track of responders in emergencies in terms both of their accumulated exposure and precise location.				
A second application of the EPD telemetry capability is for radiological work. This would include workers wearing EPDs during high radiation level work, and EPDs being posted at locations where radiation level measurements are required in high radiation background areas. Posting of EPDs in such a situation would preclude having a technician enter the danger area with a survey meter to measure the radiation level. An example would be monitoring the radiation level of the pipe through which primary plant resin is being discharged from the ship.				
<b>FY 2010 Accomplishments:</b> Procured items for evaluation. Issue report and make recommendation.				
<b>FY 2011 Plans:</b> Test and evaluate different telemetry configurations.				
<b>FY 2012 Plans:</b> Complete testing of items and determine optimum EPD telemetry configuration.				
<b>Title:</b> Optically Stimulated Luminescence (OSL)				
<b>Articles:</b>		-	0.077 0	0.078 0
<b>Description:</b> The need for dosimetry is a very significant consequence of working with or around ionizing radiation. The expensive infrastructure and investments by the Navy in its dosimetry program is evidence of the importance of a robust dosimetry system to the health and safety of the Navy's military and civilian personnel. As new and improved technologies appear, it is important to evaluate them for their potential to improve performance while reducing total operating costs. OSL is a relatively new technology where the benefits appear to be significant but have yet to be fully evaluated. This project's objective is to make				

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>		<b>PROJECT</b> 1830: <i>RADIAC Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p>modest investments with the labor of a Navy Health Physicist to explore, in collaboration with a U.S. Army colleague interested in the same technology for Army use, the potential of the military application for OSL dosimetry.</p> <p><b>FY 2011 Plans:</b> Coordinate with Defense Threat Reduction Agency (DTRA) and other services to establish common requirements.</p> <p><b>FY 2012 Plans:</b> Research dosimetric properties of OSL material for suitability as a Navy dosimeter.</p>				
<p><b>Title:</b> Speciality Survey Meters and Detectors</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Develop replacements for obsolete equipment and develop new capabilities for specialized applications. These include: 1) a Radiological Affairs Support Program (RASP) survey meter 2) a neutron detector to replace the obsolete Self Indicating Casualty Dosimeter (SICD) 3) a uRem survey meter 4) a teletector. Articles are prototypes for T&amp;E.</p> <p><b>FY 2010 Accomplishments:</b> Completed T&amp;E of RASP survey meter and uRem survey meter. Both items ready for transition to procurement.</p> <p><b>FY 2011 Plans:</b> Develop replacement for Teletector. Procure articles for T&amp;E.</p> <p><b>FY 2012 Plans:</b> Begin development of SICD, leveraging concurrent work in OSL dosimetry, and coordinate with other services to see if a common Casualty Dosimeter can satisfy Army, Navy, Marine Corps and Air Force requirements. This would be a Navy initiative coordinated by Defense Threat Reduction Agency (DTRA).</p>				<p>0.184</p> <p>0</p>
				0.165
				0.063
				22
				0
<p><b>Title:</b> Visit, Board, Search &amp; Seizure (VBSS)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The VBSS mission of the Navy includes the requirement to be able to board ships and be able to detect and identify potential radiological or nuclear Weapons of Mass Destruction (WMD). Such a sensitive mission requires leading edge technology and capabilities to ensure success. The recently fielded AN/PDX-1 RADIAC Set contains several instruments that serve different purposes, perhaps the most significant item being the detector. Current technology dictates that the sensitivity</p>				<p>0.092</p> <p>4</p>
				0.163
				0.118
				4
				8

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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<p>of the detector is directly proportional to the size of the detector element; i.e., the larger the detector, the more sensitive and capable it is. However, in VBSS there must be a tradeoff between size/weight and capability, since it is difficult and hazardous for boarding parties to carry a backpack-sized detector, along with their weapons and other gear, up a rope ladder to board a vessel on the high seas. This will be a continuing and growing effort to find smaller, lighter instruments with enhanced sensitivity, reach-back capability, and other enhancements to provide the Navy the best and most cost effective equipment possible for this critical mission.</p> <p><b>FY 2010 Accomplishments:</b> Procured Radiological Search articles for evaluation.</p> <p><b>FY 2011 Plans:</b> Procure Isotope Identifier articles for evaluation.</p> <p><b>FY 2012 Plans:</b> Procure Radiological Search and Dosimetry articles for evaluation.</p>			
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<p><b>Title:</b> Neutron Electronic Personal Dosimeter</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> A neutron EPD will show real-time neutron accumulated doses in accelerator facilities producing high neutron yields. Currently, the DT-702 dosimeter is worn, but it must be processed at an off-site facility to obtain a dose report, which are not available for several weeks after exposure. With increased demand of accelerator facility use, the lag time between dose receipt and dose report poses increased risk to personnel safety.</p> <p><b>FY 2012 Plans:</b> Evaluate COTS examples for neutron detection characteristics and suitability for use alongside the Navy's new Neutron Area Monitor.</p>	-	-	0.046 0
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<p><b>Title:</b> Neutron Area Monitor</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Several facilities throughout the Navy, particularly accelerator facilities, produce significant neutron radiation fields. Having a monitor to provide instant readings on the neutron level provides data on high dose procedures and experiments. The current system requires environmental dosimeters to be used and sent out for processing, taking weeks to obtain results. Waiting on dosimeter results may cause excessive exposures to individuals because safe radiological boundaries may not be maintained where the radiation level is not known.</p>	-	-	0.064 0
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>FY 2012 Plans:</b> Survey affected facilities to determine specific neutron monitoring requirements.				
<b>Title:</b> Air Particle Sampler (APS)  <b>Description:</b> Portable APS are used to sample for airborne radioactivity on board nuclear powered ships and in nuclear ship maintenance facilities in confined work areas where the installed Air Particle Detectors are ineffective. The current HD-732 (AC powered) and HD-1151 (DC powered) are obsolescent and will shortly be unsupportable. COTS equipment will be evaluated to replace the two current models, to include the feasibility of finding an AC/DC unit that would simplify logistical support.  <b>FY 2012 Plans:</b> Procure COTS models for evaluation to determine if they meet Navy requirements.		-	-	0.076 3
<b>Title:</b> Calibrators  <b>Description:</b> Calibrators are the basic tool used to calibrate all Navy radiological detection equipment. Essentially they consist of a high energy radiological source (Cs-137) in a shielded container that is located in a specially constructed room, or "range." A technician places the instrument to be calibrated at a specific calibration point in the range and remotely operates the calibrator by raising the source out of its container so that it irradiates the object instrument. The instrument's response to the radiation is measured so that it can be calibrated to specific tolerances. The current suite of AN/UDM-1B calibrators is over 20 years old and the natural decay of the strength of the radioactive source over time restricts calibration effectiveness by limiting the scale of calibration points below American National Standards Institute (ANSI) requirements that are followed in accordance with Navy policy. Also due to the age of the calibrators, there are several parts no longer supported by the manufacturer, and a malfunctioning calibrator poses a very high risk. COTS equipment will be surveyed to find the best solution with which to equip the Navy's seven RADIAC Calibration Laboratories.  <b>FY 2012 Plans:</b> Study state of the art COTS calibrators for suitability.		-	-	0.154 0
<b>Title:</b> Radiological Shipboard Defense Monitor  <b>Description:</b> All surface combatants require an instrument to detect and measure radiolgoical activity in the event of a nuclear detonation in order for the ship can avoid the contamination and continue its mission. The AN/PDR-65, at over 40 years of age, was the instrument used for this purpose but is obsolete and has been de-fielded. An interim replacement has been fielded while		-	0.098 0	0.083 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012
OPNAV finalizes updating the Cold War requirements under which the AN/PDR-65 was designed, in order to include radiological (terrorist dirty bomb) threats. The interim replacement is the IM-265 Survey Meter, which is already in the Navy inventory, but it was not designed for this requirement and cannot measure radiation external to the ship and is therefore not suitable as the permanent replacement.  <b>FY 2011 Plans:</b> Update Fleet requirements and specifications from Cold War scenario to current threats.  <b>FY 2012 Plans:</b> Begin study and analysis of replacement equipment and possibility of integration of a shipboard radiological warning system with a chemical and biological warning system.			
<b>Title:</b> Casualty Dosimeter  <b>Description:</b> A Casualty Dosimeter is used for triage of casualties from a nuclear or radiological event. The current IM-270's useful life will expire in 2016 so a replacement must be found.  <b>FY 2012 Plans:</b> Study alternatives, to include leveraging Army and Marine systems for Navy use.	-	-	0.070 0
<b>Articles:</b>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.325	1.358	1.338

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN 2920: <i>RADIAC</i>	3.496	6.104	6.201	0.000	6.201	8.127	8.131	8.464	8.232	Continuing	Continuing

**D. Acquisition Strategy**

Development efforts are focused on evaluation, modification (as required to meet operational requirements) and adaptation of commercial-off-the-shelf (COTS) technology in order to minimize total ownership costs. To the maximum extent possible new contracts are targeted for fixed price efforts to control development cost.

**E. Performance Metrics**

Program Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC Carderock:West Bethesda, MD	11.390	0.442	Nov 2010	0.409	Nov 2011	-		0.409	0.000	12.241	11.390
<b>Subtotal</b>			11.390	0.442		0.409		-		0.409	0.000	12.241	11.390

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	US Naval Academy:Annapolis, MD	0.015	0.015	Mar 2011	0.015	Mar 2012	-		0.015	0.000	0.045	
Development Support	SS/CPIF	Univ. of Washington:Seattle, WA	1.157	-		-		-		-	0.000	1.157	
Development Support	WR	NSWC Carderock:West Bethesda, MD	3.582	-		-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			4.754	0.015		0.015		-		0.015			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation	WR	NSWC Carderock:West Bethesda,MD	0.950	-		0.102	Nov 2011	-		0.102	0.000	1.052	0.950
<b>Subtotal</b>			0.950	-		0.102		-		0.102	0.000	1.052	0.950

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/FP	Orbis, Inc.,;Charleston, SC	2.239	0.287	Nov 2010	0.308	Feb 2012	-		0.308	Continuing	Continuing	Continuing
Labor (Researach Personnel)	MIPR	DoE, RSL,;Nellis AFB, NV	3.783	0.610	Nov 2010	0.499	Nov 2011	-		0.499	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA:Washington, D.C.	0.369	0.004	Feb 2011	0.005	Mar 2012	-		0.005	Continuing	Continuing	Continuing
<b>Subtotal</b>			6.391	0.901		0.812		-		0.812			
<b>Project Cost Totals</b>			23.485	1.358		1.338		-		1.338			

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 1830</b>																												
Development																												
Prototypes																												
Operational Testing																												
LRIP																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603542N: <i>Radiological Control</i>	<b>PROJECT</b> 1830: <i>RADIAC Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1830</b>				
Development	1	2010	4	2010
Prototypes	3	2010	4	2011
Operational Testing	4	2010	4	2011
LRIP	2	2013	2	2014

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>								
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>			PE 0603553N: <i>Surface ASW</i>								
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>											
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	21.420	21.673	29.797	-	29.797	0.867	1.121	1.103	1.151	Continuing	Continuing
1704: <i>Undersea Warfare</i>	19.827	21.673	29.797	-	29.797	0.867	1.121	1.103	1.151	Continuing	Continuing
9999: <i>Congressional Adds</i>	1.593	-	-	-	-	-	-	-	-	0.000	1.593

**A. Mission Description and Budget Item Justification**

The Anti-Submarine Warfare (ASW) Advanced Development project provides advanced development demonstration and validation of technology for potential surface sonar and combat system applications. Program Element (PE) 0603553N has been designated to support emerging multi-static technologies, and the Chief of Naval Operations' (CNO) ASW Initiative. For FY09 and prior, efforts focused on resolution of technical issues associated with providing capability against the FY09 and beyond threat, with emphasis on shallow water/littoral areas, deep water Undersea Warfare (USW), and demonstration and validation of USW concepts and technology. Key technology areas included active sonar transmissions; advanced signal and data processing; active sonar classification; towed and hull arrays; transducer technology; and periscope detection techniques. Starting in FY07, the CNO's ASW Initiative (formerly known as Task Force ASW) included the development of new and innovative technologies. Efforts associated with these technologies include design, development, integration, and testing of future undersea superiority systems. These systems include distributed sensor systems; Vertical Line Array (VLA); static active buoy fields; submarine countermeasures; compact rapid-effect weapons; longer-range radio systems; multi-static sonar; Continuous Active Sonar (CAS) and Variable Depth Sonar (VDS); and multi-sensor data fusion, including multi-platform data fusion and net-centric USW concepts. An Office of the Chief of Naval Operations (OPNAV) letter of direction limits the scope of this project, beginning in FY10, to the development of CAS/VDS and the continuation of studies in support of the ASW Initiative.

Project Unit 9999 is comprised of a Congressional Add for "Low Frequency Active Towed Sonar Organic ASW Capability" (FY10 Project 10C108).

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	23.497	21.673	34.542	-	34.542
Current President's Budget	21.420	21.673	29.797	-	29.797
Total Adjustments	-2.077	-	-4.745	-	-4.745
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.000	-			
• SBIR/STTR Transfer	-0.584	-			
• Program Adjustments	-	-	-4.192	-	-4.192
• Section 219 Reprogramming	-0.493	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.553	-	-0.553

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603553N: *Surface ASW*

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Low Frequency Active Towed Sonar Organic ASW Capability*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	1.593	-
	1.593	-
	1.593	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1704: <i>Undersea Warfare</i>	19.827	21.673	29.797	-	29.797	0.867	1.121	1.103	1.151	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The CNO's ASW initiative is a focused effort to identify the most promising ASW technologies through a process of discovery, assessment, experimentation, and analysis. The CNO's ASW initiative will coordinate the development of technologies which move beyond incremental or marginal improvements in ASW effectiveness. The CNO's vision of "fundamentally changing the way ASW is currently conducted to render the enemy submarine irrelevant against US and coalition forces" necessitates a change in the calculus of how the US Navy conducts ASW. Central to the CNO's ASW initiatives achieving the CNO's vision are several innovative approaches which include using the art-of-the-technologically-possible; minimizing force-on-force; reducing the ASW end-to-end time line; supporting rapid maneuver; developing off-board and distributed ASW detection systems; and finding innovative weapons solutions. To achieve these key approaches, it is essential to develop new ASW technologies and conduct at-sea experiments to prove/disprove technology concepts and collect corroborating data. An OPNAV letter of direction limits the scope of this project, beginning in FY10, to the development of CAS/VDS and the continuation of studies in support of the ASW Initiative.

The CAS/VDS sonar is intended, at a minimum, to support ASW escort missions for the Littoral Combat Ship (LCS). The system shall be developed as an effective and affordable LCS deep water, wide area, and active sonar search capability in the form of a VDS for inclusion as part of the ASW Mission Module. The program shall target LCS-2 as the test platform. Efforts shall include development of a Launch and Retrieval system designed to survive high tow speeds, provide a high sweep rate capability and large stand-off detection ranges and should outperform current systems under all conditions. Components should leverage existing systems such as the Multi-Function Towed Array (MFTA) to limit costs and reduce risk of early efforts. Efforts will also include the conduct of studies to validate performance goals and design options and should leverage the UK 2087 VDS test program to the maximum practical extent. The technology development timeline should be aligned to provide an introduction of the technology through the Advanced Capability Build (ACB) process.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> CNO ASW Initiatives	19.827	21.673	29.797
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Continued development of continuous active sonar (CAS) and variable depth sonar (VDS) for surface combat systems, continued studies of new acoustic, non-acoustic, and off-board sensors and conducted independent critical review and analysis of alternatives of selected and potential CNO ASW initiative technologies. Awarded VDS development contract.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>		<b>PROJECT</b> 1704: <i>Undersea Warfare</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2010</b>	<b>FY 2011</b>
Continue development of CAS and VDS for surface combat systems, continue studies of new acoustic, non-acoustic, and off-board sensors and continue independent critical review and analysis of alternatives of selected and potential CNO ASW initiative technologies.				
<b><i>FY 2012 Plans:</i></b> Complete CAS/VDS Advanced Development Model (ADM) development, fabrication and land based testing of towed source, receive array, handling system and in-board electronics, controls and displays. Install CAS/VDS ADM on Littoral Combat Ship (LCS) platform. Conduct at-sea testing of ADM. Initiate efforts to mature ADM to Engineering Development Model (EDM) level.				
<b>Accomplishments/Planned Programs Subtotals</b>			19.827	21.673
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.				
<b>E. Performance Metrics</b> Conduct CAS/VDS ADM Sea Test 3Q12.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Technology Development	C/CPFF	AAC:NY	1.134	-		-		-		-	0.000	1.134	
Technology Development	C/CPFF	Adaptive Methods:VA	3.788	-		-		-		-	0.000	3.788	
Technology Development	C/CPFF	Alion Sciences:VA	5.500	1.500	Jan 2011	-		-		-	0.000	7.000	
Technology Development	C/CPAF	EG&G:VA	1.050	0.500	Dec 2010	0.500	Dec 2011	-		0.500	Continuing	Continuing	Continuing
Technology Development	C/CPFF	In-Depth Engineering:VA	-	2.375	Feb 2011	-		-		-	0.000	2.375	
Technology Development	C/CPFF	JHU/APL:MD	23.304	1.925	Dec 2010	-		-		-	0.000	25.229	
Technology Development	C/CPFF	L-3 Communications:VA	3.000	-		-		-		-	0.000	3.000	
Technology Development	C/CPFF	Lockheed Martin - ISS:NY	2.610	2.000	Dec 2010	-		-		-	0.000	4.610	
Technology Development	WR	NSWC/Carderock:MD	1.106	1.595	Jan 2011	-		-		-	0.000	2.701	
Technology Development	WR	NUWC/Keyport:WA	0.520	0.270	Nov 2010	-		-		-	0.000	0.790	
Technology Development	WR	NUWC/Newport:RI	22.976	4.076	Nov 2010	0.500	Oct 2011	-		0.500	Continuing	Continuing	Continuing
Technology Development	C/CPFF	Northrop Grumman:VA	4.684	-		-		-		-	0.000	4.684	
Technology Development	C/CPFF	UT/ARL:TX	4.908	-		-		-		-	0.000	4.908	
Technology Development	C/CPFF	VAR:VAR*	3.887	1.107	Jan 2011	-		-		-	0.000	4.994	
<b>Subtotal</b>			78.467	15.348		1.000		-		1.000			

**Remarks**

\*Consists of multiple performing activities with funding for each not greater than \$1M per year.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
At-Sea Test/Experiment	WR	ONR:VA	5.500	-		-		-		-	0.000	5.500	
Developmental Test & Evaluation	C/CPFF	AAC:NY	1.067	-		-		-		-	0.000	1.067	
	C/CPFF	Alion:VA	-	-		2.500	Dec 2011	-		2.500	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation													
Developmental Test & Evaluation	C/CPFF	Lockheed Martin:NY	-	-		6.674	Dec 2011	-		6.674	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC/Carderock:MD	0.672	-		-		-		-	0.000	0.672	
Developmental Test & Evaluation	WR	NUWC/Newport:RI	3.472	5.500	Nov 2010	15.278	Oct 2011	-		15.278	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NRL:DC	0.537	-		-		-		-	0.000	0.537	
Developmental Test & Evaluation	WR	NSMA:VA	0.907	-		-		-		-	0.000	0.907	
Developmental Test & Evaluation	C/CPFF	UT/ARL:TX	1.844	-		-		-		-	0.000	1.844	
Enhanced Data Collection (SSEMP)	C/CPFF	JHU/APL:MD	4.462	-		2.776	Dec 2011	-		2.776	0.000	7.238	
Enhanced Data Collection (SSEMP)	C/CPFF	UT/ARL:TX	2.000	-		-		-		-	0.000	2.000	
Test & Evaluation	C/CPFF	VAR:VAR*	1.177	-		0.826	Dec 2011	-		0.826	Continuing	Continuing	Continuing
<b>Subtotal</b>			21.638	5.500		28.054		-		28.054			

**Remarks**

\*Consists of multiple performing activities with funding for each not greater than \$1M per year.

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/CPAF	BAE Systems:MD	2.961	0.775	Jan 2011	0.693	Dec 2011	-		0.693	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA PEO IWS 5:DC	0.200	0.050	Jan 2011	0.050	Oct 2011	-		0.050	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>
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Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			3.161	0.825		0.743		-		0.743			
		<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			103.266	21.673		29.797		-		29.797			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016													
	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										
	<b>CNO ASW Initiative</b>																																					
Technology Development																																						
Conduct At-Sea Experiments			▲				△																															
Analyze Experimental Data	■							□																														
<b>Continuous Active Sonar (CAS) / Variable Depth Sonar (VDS)</b>																																						
CAS/VDS Data Collection	▲																																					
Build/Test VDS ADM																																						
CAS/VDS ADM Sea Test											△																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 1704: <i>Undersea Warfare</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1704</b>				
Technology Development	1	2010	4	2010
Conduct At-Sea Experiment (test promising technologies)	3	2010	3	2011
Analyze Experimental Data	1	2010	4	2011
CAS/VDS Data Collection	1	2010	1	2010
Build/Test VDS ADM	4	2010	2	2012
CAS/VDS ADM Sea Test	3	2012	3	2012

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603553N: <i>Surface ASW</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	1.593	-	-	-	-	-	-	-	-	0.000	1.593
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Adds.

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

<b><i>Congressional Add:</i></b> Low Frequency Active Towed Sonar Organic ASW Capability	FY 2010	FY 2011
	1.593	-
<b><i>FY 2010 Accomplishments:</i></b> FY10 Congressional Add - Project 10C108: Low Frequency Active Sonar Organic Anti-Submarine Warfare (ASW) capability improvement development. Effort includes the design, fabrication, integration and testing of an Engineering Development Model (EDM) transmit array (variable depth sonar transducer). This supports the Navy's Continuous Active Sonar/Variable Depth Sonar (CAS/VDS) advanced development project that will develop an effective and affordable, deep water, wide area active Anti-Submarine Warfare search capability for transition to the Littoral Combat Ship (LCS).		
<b>Congressional Adds Subtotals</b>	1.593	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: (U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	523.133	608.566	856.326	-	856.326	927.814	1,136.403	860.702	823.989	Continuing	Continuing
0223: <i>Sub Combat System Improvement (ADV)</i>	49.250	51.040	40.862	-	40.862	39.277	39.011	40.069	40.879	Continuing	Continuing
2033: <i>Adv Submarine Systems Development</i>	72.544	42.515	33.889	-	33.889	31.040	33.167	33.942	34.262	Continuing	Continuing
3197: <i>Undersea Superiority</i>	30.798	21.983	-	-	-	-	-	-	-	0.000	52.781
3220: <i>SBSD Advanced Submarine System Development</i>	363.371	493.028	781.575	-	781.575	857.497	1,064.225	786.691	748.848	Continuing	Continuing
9999: <i>Congressional Adds</i>	7.170	-	-	-	-	-	-	-	-	0.000	7.170

**A. Mission Description and Budget Item Justification**

This program element supports innovative research and development in submarine hull and combat systems technologies and the subsequent evaluation, demonstration, and validation for submarine platforms. It will increase the submarine technology base and provide subsystem design options not currently feasible. The program element also supports programs transitioning from Science and Technology (S&T), Defense Advanced Research Projects Agency (DARPA), Independent Research and Development, and Small Business Innovation Research (SBIR) projects.

**Project Unit 0223:**

The Advanced Submarine Combat Systems Development non-acquisition (NON-ACAT) program supports Navy Submarine Acoustic Superiority and Technology Insertion Initiatives through the application of advanced development and testing of sonar and tactical control systems improvements. This Project transitions technologies developed by Navy Technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities (FNC), and DARPA. The Project addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battle space preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware/software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build - Acoustic (APB-A), Advanced Processing Build - Tactical (APB-T), Advanced Processing Build - Imaging (APB-I) and Advanced Sonar Arrays. APBs develop and demonstrate improvements to current and future sonar/combat control systems. The Advanced Sonar Arrays program develops and tests new sensors and demonstrates large array configuration. This Project is funded under demonstration and validation, as it develops and integrates hardware for experimental tests related to specific platform applications.

**Project Unit 2033:**

The Advanced Submarine Systems Development (ASSD) Program is a non-acquisition program that develops and matures technologies for successful integration into future and modernized submarine classes, thus lowering acquisition and life cycle program costs while improving mission capability. ASSD transitions Hull,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>

Mechanical, and Electrical (HM&E) technologies from Science & Technology (S&T) and Research and Development (R&D) to operational platforms; performs tests and demonstrates submarine design and naval architecture products destined for integration into future submarine classes or backfit into existing fleet assets; and operates unique R&D experimentation, modeling, testing and simulation facilities to enhance submarine stealth, maneuverability, capability, and affordability. The program is structured to support near and mid-term technology insertion to achieve future submarine class total ownership cost reductions and requirements, and influence future submarine concept designs and core technologies.

In support of Sea Power 21, Sea Trial experimentation supports the naval enterprises in identifying and prototyping capabilities and technologies that support the warfighter. Focus is on the Undersea Enterprise (USE), the Naval Network/FORCENET (NNFE), Naval Expeditionary Combat Enterprise (NECE), Surface Warfare Enterprise (SWE), and Special Operations Force Enterprise (SOFE). In addition to enterprise support, the fleet experimentation initiative identifies, develops, integrates, and tests Intelligence, Surveillance, and Reconnaissance (ISR) technologies and develops littoral precision strike capabilities supporting the Overseas Contingency Operations (OCO).

Experimentation and demonstration is conducted in a joint warfighting context with other services, (i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force), to enable early assessment of warfighting capabilities, and to contribute to smarter technology selection decisions for potential incremental development.

This program also supports Information Exchange Programs and joint Project Arrangements (PA) with the United Kingdom, Canada, and Australia.

Project 2033 is comprised of four budget categories: Stealth, Payloads & Sensors, Advanced Propulsion/Ship Concept Development and Total Ownership Cost/Affordability.

The major developmental efforts include:

Sustainment of Vital Submarine Stealth R&D Capabilities

- Large Scale Vehicle (LSV)
- Intermediate Scale Measurement System (ISMS)
- Submarine Signature Management

Development of Technologies to Reduce Submarine Total Ownership Cost:

- Hydraulics Elimination through Electrification
- Advanced CO2 Scrubber
- Transition of ONR FNC for Affordable Submarine Propulsion and Control Surface Electric Actuator

Development of Advanced Propulsion Systems and Ship Concepts

- DARPA/Navy Tango Bravo Technology Transition
- Control Surface Electric Actuation of Retractable Bow Planes

Improved Payload & Sensor Capabilities

- Next Generation Towed Array and Towed Array Reliability
- Innovation Technology Transition

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>
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Project Unit 3197:  
The Undersea Superiority Project supports offboard Anti-Submarine Warfare (ASW) technologies selected by the Chief of Naval Operations (CNO) ASW Cross Functional Team for technologies that hold the potential for deployment and/or use by submarine platforms. Efforts associated with these technologies include design, development, integration and testing of future Undersea Superiority systems.

Project Unit 3220:  
The objective of the Sea Based Strategic Deterrent (SBSD) Advanced Submarine System Development project is to design and prepare for construction of the replacement of the OHIO Class SSBN.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	549.392	608.566	841.214	-	841.214
Current President's Budget	523.133	608.566	856.326	-	856.326
Total Adjustments	-26.259	-	15.112	-	15.112
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-6.914	-			
• SBIR/STTR Transfer	-17.390	-			
• Program Adjustments	-	-	26.730	-	26.730
• Section 219 Reprogramming	-1.085	-	-	-	-
• Rate/Misc Adjustments	-	-	-11.618	-	-11.618
• Congressional General Reductions	-0.070	-	-	-	-
Adjustments					
• Congressional Add Adjustments	-0.800	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

- Congressional Add: *SSBN(X) Systems Development*
- Congressional Add: *Underwater Explosion Modeling for Non-Pressure Hull Fairing*
- Congressional Add: *High Torque, Low Speed, Direct Drive Electric Motor Technology*
- Congressional Add: *Submarine Fatline Vector Sensor Towed Array*

	<b>FY 2010</b>	<b>FY 2011</b>
	1.992	-
	1.992	-
	1.593	-
	1.593	-
	7.170	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: (U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT
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<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999		
Congressional Add Totals for all Projects	7.170	-



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: (U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0223: <i>Sub Combat System Improvement (ADV)</i>	49.250	51.040	40.862	-	40.862	39.277	39.011	40.069	40.879	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project Unit 0223: The Advanced Submarine Combat Systems Development Non-ACAT program supports Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and tactical control systems improvements. This Project addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battle space preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. These technologies, developed by Navy technology bases, the private sector, ONR, FNC, and DARPA are then transitioned. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts are APB-A, APB-T, APB-I, tactical control, and Advanced Sonar Arrays. APBs develop and demonstrate improvements to current and future sonar/combat control systems. The Advanced Sonar Arrays program develops and tests new sensors and demonstrates large array configuration.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Advanced Processing Build - Acoustic</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> FY10 focused on the initial development for APB-11. Efforts included improved signal processing to stitch close aboard acoustic coverage to provide 360-degree situational awareness and improved ranging tools, search space reduction tools, active systems, and signal processing for the new fatline towed array. Efforts focused on more seamless integration of acoustic and non-acoustic sensor information for tracking and command information. Conducted a shore test event to inform design decision for future APBs. Tested and delivered updates to bell ringers and contact followers for transition to AN/BQQ-10 in 4Q10.</p> <p><b>FY 2011 Plans:</b> FY11 will focus on completing development, integration and land-based testing for APB-11. Develop Temporary Alterations (TEMPALTs) and test plans/procedures for APB-11 land-based and at-sea testing. Develop concepts and tactical scenarios for APB-13.</p> <p><b>FY 2012 Plans:</b> FY12 will focus on completing at-sea testing and the transition for APB-11. Conduct land-based testing and transition of minor updates for APB-12. Establish content and continue the development of capabilities for APB-13.</p>	<p>18.950</p> <p>0</p>	<p>18.000</p> <p>0</p>	<p>15.200</p> <p>0</p>
<b>Title:</b> Advanced Processing Build - Tactical	14.625	8.000	8.100

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>		0	0	0
<b>FY 2010 Accomplishments:</b> FY10 focused on initial development for APB-11. Efforts included improving the tactical commander's ability to manage close-in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, uncertainty management, and close encounter decision management. Efforts focused on more seamless integration of acoustic and non-acoustic sensor information for tracking and command information. Initiated efforts to establish the APB-Imaging process.				
<b>FY 2011 Plans:</b> FY11 will focus on completing development, integration and land-based testing of APB-11. Develop TEMPALTs and test plans and procedures for APB-11 land-based and at-sea testing. Develop concepts and tactical scenarios for APB-13.				
<b>FY 2012 Plans:</b> FY12 will focus on completing at-sea testing and transition for APB-11. Conduct land-based testing and transition of minor updates for APB-12. Establish content and continue the development of capabilities for APB-13.				
<b>Title:</b> Advanced Processing Build - Imaging		-	10.000	10.200
<b>Articles:</b>			0	0
<b>FY 2011 Plans:</b> Establish groups, charters and infrastructure for commencement of APB-Imaging efforts. APB-11 development efforts begin focus on improving imaging system's signal processing to automate repetitive tasks and develop automated detection, tracking and ranging capabilities. Initiate efforts to baseline system performance. Complete development, integration and land-based testing of APB-11. Develop TEMPALTs and test plans/procedures for APB-11 land-based and at-sea testing. Develop concepts and tactical scenarios for APB-13.				
<b>FY 2012 Plans:</b> FY12 will focus on completing at-sea testing and transition for APB-11. Conduct land-based testing and transition of minor updates for APB-12. Establish content and continue the development of capabilities for APB-13.				
<b>Title:</b> Advanced Sensors		15.675	15.040	7.362
<b>Articles:</b>		0	0	0
<b>FY 2010 Accomplishments:</b> The Conformal Acoustic Velocity Sonar (CAVES) Large Vertical Array (LVA) installation was completed onboard USS DALLAS (SSN700). An at-sea test was completed 4Q10. The Low Cost Conformal Array (LCCA) Advanced Development Model (ADM) dual-array testing on USS CHEYENNE was completed. The LCCA program began transition to PMS401 for production. Initial design for the Light Weight (LW) LCCA ADM was completed. Demonstrated encrypted digital Acoustic Communications				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>(ACOMMS). Lake Pend Oreille (LPO) tow tests of connectionless telemetry and 3X Twin-Line Thin-Line (TLTL) partial prototype array were completed.</p> <p><b>FY 2011 Plans:</b> CAVES LVA will complete at-sea testing and analysis. LW LCCA ADM fabrication is scheduled to be completed by the end of FY11 and tow tests of 3X TLTL and 3X Vector Sensor Towed Array (VSTA) will be completed.</p> <p><b>FY 2012 Plans:</b> Complete system integration of 9X Twin-Line (TL) towed array. Conduct 9X TL towed array LPO, research vessel sea test, and data analysis. Complete fabrication of 9X VSTA. Finalize TL towed array submarine TEMPALT development and submarine clip-on stream and retrieve procedures.</p> <p>Perform array and telemetry integration testing in-lab and at Lake Travis. Perform all electrical assessments including Electromagnetic Interference (EMI) testing and optical loss baselining. Complete Operational Alteration (OPALT) package for installation and begin physical installation 4Q12.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	49.250	51.040	40.862

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

N/A

**D. Acquisition Strategy**

Use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

**E. Performance Metrics**

- Advanced Processing Build (APB): Deliver at-sea tested submarine capability improvements to PEO Submarines as prescribed by the Fleet every two years (minor updates are planned in the 'even' years). Conduct milestone reviews with the Milestone Decision Authority and PEO Submarines prior to delivery.
- Conducted Conformal Acoustic Velocity Sonar (CAVES) sea test 3Q10. CAVES provides significant advantages over existing technology; 2/3 of acquisition and installation costs, 10% of life cycle costs, and less impact on hull structure. CAVES/Wide Aperture Array (WAA) replacement of Light Weight WAA provides a cost savings of \$8M - \$13M/ship.
- Conducted Low Cost Conformal Array (LCCA) Advanced Development Model (ADM) sea test 1Q10.
- Deliver Twin Line Thin Line (TLTL) Short Aperture (3X) Array, Vector Sensor Towed Array (VSTA) Short Aperture (3X) Array, TLTL & VSTA (3X) Lake Pend Oreille Test Reports.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	C/CPFF	Adaptive Methods:VA	0.700	0.225	Feb 2011	-		-		-	0.000	0.925	Continuing
Product Development	C/CPFF	Alion Sciences:VA	3.267	-		-		-		-	0.000	3.267	Continuing
Product Development	C/CPFF	Chesapeake Science:MD	2.799	3.827	Feb 2011	0.750	Dec 2011	-		0.750	Continuing	Continuing	Continuing
Product Development	C/CPFF	Electric Boat:ME	0.375	0.350	Feb 2011	1.040	Dec 2011	-		1.040	Continuing	Continuing	Continuing
Product Development	C/CPFF	General Dynamics:VA	12.647	0.900	Feb 2011	0.300	Dec 2011	-		0.300	Continuing	Continuing	Continuing
Product Development	C/CPFF	GA Tech Research Institute:GA	2.716	0.200	Feb 2011	-		-		-	0.000	2.916	Continuing
Product Development	C/CPFF	In Depth Engineering:VA	2.050	0.600	Dec 2010	0.750	Dec 2011	-		0.750	Continuing	Continuing	Continuing
Product Development	C/CPFF	JHU/APL:MD	47.533	8.880	Dec 2010	8.750	Dec 2011	-		8.750	Continuing	Continuing	Continuing
Product Development	C/CPFF	Lockheed Martin:VA	28.756	4.700	Dec 2010	5.500	Dec 2011	-		5.500	Continuing	Continuing	Continuing
Product Development	C/CPFF	Lockheed Martin:NY	6.514	1.800	Dec 2010	0.400	Dec 2011	-		0.400	Continuing	Continuing	Continuing
Product Development	C/CPFF	METRON:VA	4.158	-		-		-		-	0.000	4.158	Continuing
Product Development	WR	NSWC/Carderock:MD	20.477	2.188	Nov 2010	0.750	Oct 2011	-		0.750	Continuing	Continuing	Continuing
Product Development	WR	NUWC/Newport:RI	56.088	9.740	Nov 2010	7.683	Oct 2011	-		7.683	Continuing	Continuing	Continuing
Product Development	C/CPAF	NSMA:VA	7.394	0.550	Mar 2011	1.250	Nov 2011	-		1.250	Continuing	Continuing	Continuing
Product Development	WR	ONI:DC	0.895	0.650	Feb 2011	0.750	Nov 2011	-		0.750	Continuing	Continuing	Continuing
Product Development	WR	ONR:VA	2.725	-		-		-		-	0.000	2.725	Continuing
Product Development	C/CPFF	Progeny:VA	3.607	0.281	Feb 2011	0.200	Dec 2011	-		0.200	Continuing	Continuing	Continuing
Product Development	C/CPFF	PSU/ARL:PA	3.718	1.340	Jan 2011	1.570	Dec 2011	-		1.570	Continuing	Continuing	Continuing
Product Development	C/CPFF	SAIC:VA	2.550	1.005	Feb 2011	-		-		-	0.000	3.555	Continuing
Product Development	C/CPFF	SEDNA:VA	4.214	1.500	Dec 2010	0.750	Dec 2011	-		0.750	Continuing	Continuing	Continuing
Product Development	WR	SSC/San Diego:CA	1.453	0.060	Dec 2010	-		-		-	0.000	1.513	Continuing
Product Development	MIPR	U.S. Army Research Lab:MD	1.300	0.400	Dec 2010	-		-		-	0.000	1.700	Continuing
Product Development	MIPR	U.S. Army/MITRE:NJ	4.595	-		-		-		-	0.000	4.595	Continuing
Product Development	MIPR	U.S. Hanscom AFB/MIT Lincoln Labs:MA	9.484	1.400	Jan 2011	1.400	Nov 2011	-		1.400	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	C/CPFF	UT/ARL:TX	18.360	2.215	Dec 2010	2.520	Dec 2011	-		2.520	Continuing	Continuing	Continuing
Product Development	C/CPFF	VAR:VAR*	3.261	6.169	Feb 2011	4.424	Dec 2011	-		4.424	Continuing	Continuing	Continuing
<b>Subtotal</b>			251.636	48.980		38.787		-		38.787			

**Remarks**  
\*Consists of multiple performing activities with funding for each not greater than \$1M per year.

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/CPAF	Stanley and Associates:VA	1.000	-		-		-		-	0.000	1.000	Continuing
Program Management Support	C/CPAF	BAE Systems:MD	7.349	1.050	Feb 2011	1.050	Dec 2011	-		1.050	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	EG&G:VA	0.950	0.950	Feb 2011	0.950	Dec 2011	-		0.950	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA PEO IWS5:DC	0.375	0.060	Jan 2011	0.075	Oct 2011	-		0.075	Continuing	Continuing	Continuing
<b>Subtotal</b>			9.674	2.060		2.075		-		2.075			

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		261.310	51.040		40.862		-	40.862			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: (U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016					
	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		
<b>Advanced Processing Build (Acoustic, Tactical and Imaging)</b>			APB-10 Shore Test	Transition					APB-11 Sea Test	Transition	APB-12 Shore Test	Transition	APB-13 Sea Test	Transition	APB-14 Shore Test	Transition					APB-15 Sea Test	Transition					APB-16 Shore Test	Transition		
<b>Conformal Acoustic Velocity Sonar / Large Vertical Array</b>			Test CAVES ADM																											
<b>Light Weight Low Cost Conformal Array (LW LCCA)</b>											Integration/Installation				LW ADM Sea Test															
<b>Advanced Towed Array Technology</b>			Develop Array Technologies																											
<b>Ohio Class Replacement Program</b>																														

\*Note: Even year APBs (APB-12, APB-14, APB-16) constitute minor updates on an emergent need basis.

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0223</b>				
APB-10 Shore Test	3	2010	3	2010
Transition APB-10 to ARCI/BYG-1	4	2010	4	2010
APB-11 Sea Test	2	2012	2	2012
Transition APB-11 to ARCI/BYG-1	2	2012	3	2012
APB-12 Shore Test	4	2012	4	2012
Transition APB-12 to ARCI/BYG-1	1	2013	1	2013
APB-13 Sea Test	3	2013	3	2013
Transition APB-13 to ARCI/BYG-1	4	2013	4	2013
APB-14 Shore Test	3	2014	3	2014
Transition APB-14 to ARCI/BYG-1	4	2014	4	2014
APB-15 Sea Test	3	2015	3	2015
Transition APB-15 to ARCI/BYG-1	4	2015	4	2015
APB-16 Shore Test	3	2016	3	2016
Transition APB-16 to ARCI/BYG-1	4	2016	4	2016
Test ADM array	4	2010	4	2010
Transition to VA Class SSNs (CAVES/LVA)	1	2010	4	2011
LW LCCA ADM Development	1	2010	4	2011
LW LCCA Integration/Installation	1	2012	4	2012
LW LCCA ADM Sea Test	1	2013	1	2013
Transition to VA Class SSNs	2	2013	4	2013
Develop Array Technologies	1	2010	4	2014

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 0223: <i>Sub Combat System Improvement (ADV)</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Build & Test Prototype Arrays	1	2010	4	2014
Conduct Ohio Class Replacement Array Studies	1	2012	4	2016



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>				<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2033: <i>Adv Submarine Systems Development</i>	72.544	42.515	33.889	-	33.889	31.040	33.167	33.942	34.262	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Advanced Submarine Systems Development (ASSD) Program is a non-acquisition program that develops and matures technologies for successful integration into future and modernized submarine classes, thus lowering acquisition and life cycle program costs while improving mission capability. ASSD transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science & Technology (S&T) and Research and Development (R&D) to operational platforms; performs tests and demonstrates submarine design and naval architecture products destined for integration into future submarine classes or backfit into existing fleet assets; and operates unique R&D experimentation, modeling, testing and simulation facilities to enhance submarine stealth, maneuverability, capability, and affordability. The program is structured to support near and mid-term technology insertion to achieve future submarine class total ownership cost reductions and requirements, and influence future submarine concept designs and core technologies.

Experimentation is a critical component in technology maturity assessment. The ASSD program works within the Sea Trials process to identify and exploit test opportunities that can provide assessment and maturation for appropriate technologies. Sea Trials experiments provide joint test opportunities in relevant environments at significantly less cost.

This program also supports joint Project Arrangements (PAs) with the United Kingdom, and Information Exchange Programs with Canada, Australia, Japan, South Korea, Malaysia, Norway, Sweden, Germany, Netherlands and Italy.

Project 2033 is comprised of four budget categories: Stealth, Payloads & Sensors, Advanced Propulsion/Ship Concept Development and Total Ownership Cost (TOC)/Affordability.

The major developmental efforts include:

Sustainment of Vital Submarine Stealth R&D Capabilities

- Large Scale Vehicle (LSV)
- Intermediate Scale Measurement System (ISMS)
- Submarine Signature Management

Development of Technologies to Reduce Submarine Total Ownership Cost:

- Hydraulic Elimination through Electrification
- Advanced CO2 Scrubber
- Transition of ONR FNC for Affordable Submarine Propulsion and Control Surface Electric Actuator

Development of Advanced Propulsion System and Ship Concepts

- DARPA/Navy Tango Bravo Technology Transition

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
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- Control Surface Electric Actuation of Retractable Bow Planes
- Improved Payload & Sensor Capabilities
- Next Generation Towed Array Handling System and Towed Array Reliability
- Innovation Technology Transition
- Irregular Warfare

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Payloads and Sensors/Subtotal Cost</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Develop promising advanced technologies and/or concepts capable of revolutionizing submarine design, reducing cost, improving payload flexibility, increasing capability, reducing weight and space requirements, exploring alternative payload launch mechanisms, increasing reliability with accompanying decreases in required maintenance, and improving material strength. Develop payload demonstrations targeted at improving flexible ocean interfaces, Intelligence, Surveillance, Reconnaissance (ISR) requirements, and payload and launch retrieval methods from undersea platforms. Conduct Navy and joint SEA TRIALS that take demonstrations to the Fleet in order to assess the operational value of the technologies and systems under consideration. The SEA TRIALS/experiments support examination and assessment of potential new Fleet capabilities based on Sea Power 21. Focus is on the Undersea Enterprise (USE), the Naval Network/FORCENET (NNFE), Naval Expeditionary Combat Enterprise (NECE), Surface Warfare Enterprise (SWE), and Special Operations Force Enterprise (SOFE).</p> <p><b>FY 2010 Accomplishments:</b> The Small Missile Encapsulation (SME) project completed the design work necessary for testing a translating Vertical Launch System (VLS) shock tube with a Littoral Warfare Weapon (LWW) capsule at up to seven knots at a depth equivalent of an SSN at periscope depth. The actual testing was not accomplished as the funding was required for other higher priority projects. The LWW team then proceeded to conduct a "Smart Shutdown" of the SME technology development work and will document the results as the effort is "put on the shelf". Similarly, the system engineering and safety tasks for a Water Piercing Missile Launcher (WPML) unique launcher design and technology feasibility demonstration effort was curtailed due to funding constraints, and a "Smart Shutdown" process was executed to document the accomplishments and identify future technical challenges of the project. Developed, tested, and transitioned ISR technologies to support Irregular Warfare (IW). IW efforts involved technology risk evaluation of unmanned vehicle autonomous systems and submarine interfaces for experimentation on SSGN to include the integration of the Sensor Hosting Autonomous Remote Craft (SHARC) Unmanned Vehicle. Integration efforts also focused on host ship interfaces to incorporate the Universal Launch and Recovery Module (ULRM), as well as exterior platform nodes and non-organic sensors. Small Business Innovative Research efforts included transition of developed technologies including efforts on the hull-mounted Non Traditional Sensor System (NTSS). Funding stream for SME and WPML ends in FY10.</p> <p><b>FY 2011 Plans:</b></p>	19.684	8.406	3.393
	0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>		<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p>Complete final documentation and reports for the SME/LWW capsule technology development efforts. Complete final documentation and reports for the WPML technology demonstration effort. Develop, test, and transition ISR technologies to support Irregular Warfare. Conduct SSGN exercises as part of Talisman Sabre 2011 (TS21) to demonstrate an integrated Joint ISR architecture, persistent ISR, and advanced networking capability to Joint Force and local commanders in real time. Experimentation as part of Talisman Sabre 2011 (TS21) will include SSGN integration with autonomous vehicles to support Theater Commander's requirements. Conduct operational testing of the SHARC Unmanned Vehicle and integrate those operations into the Naval Oceanographic Office (NAVOCEANO) Glider Operation Center (GOC).</p> <p><b>FY 2012 Plans:</b> Conduct initial studies on low-cost Towed Array Handling System concepts and begin definition and development of physics-based modeling tools. Perform preliminary requirements definition for technology transfer initiatives based on small business research studies. Execute evaluation demonstration for the Universal Launch and Recovery Module (ULRM) from an SSGN. The initiative focuses on unmanned systems integration and deployment, procedure development and refinement, and risk reduction activities to transition to a Theatre Commander.</p>				
<b>Title:</b> Stealth/Subtotal Cost				22.203
				0
				23.912
				0
				23.378
				0
<p><b>Description:</b> Develop technologies and tools to increase the survivability of submarines by recognizing and mitigating sources of noise and non-acoustic vulnerabilities to ensure submarines can penetrate contested waters and remain undetected in the littorals. Develop technologies, Tactics, Techniques, and Procedures (TTPs) that facilitate new or enhanced existing warfighting concepts. Operate the Large Scale Vehicle (LSV 2) and the Intermediate Scale Measurement System (ISMS) to conduct large model experiments for submarines focusing on stealth, maneuvering and control, affordability, and operational effectiveness.</p> <p><b>FY 2010 Accomplishments:</b> Conducted LSV maintenance, support, and operations and maintained LSV and ISMS test ranges. Continue qualification testing associated with a new material for use in future conformal arrays. Obtained full-scale data to support validation of modeling techniques related to Electromagnetic (EM) Signature propagation. Conducted full-scale submarine acoustic and underwater electromagnetic signature trials to baseline submarine signature evaluations. Executed R&amp;D related to flow-noise, future sonar concepts, and structural acoustics for ONR, VA Class Program Office, and OHIO Class Replacement Program Office. Performed studies to define cost-effective degaussing signature control technologies. Conducted initial physical scale model experiments to evaluate degaussing control systems. Developed numeric and analytic models to predict stress magnetization and validate results</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>by comparing to physical scale model and available full-scale data. Initiated Electromagnetic Silencing Project Agreement (PA) with the United Kingdom (UK) to develop technologies for OHIO Replacement and Successor programs.</p> <p><b>FY 2011 Plans:</b> Conduct LSV operations and maintain LSV and ISMS test ranges. Support OHIO Class SSBN replacement and future VA Class design development. Support VA Class Cost Reduction Sail Trials. Continue conducting full-scale baseline signature measurement trials. Complete qualification testing associated with a new material for use in future conformal arrays. Continue Electromagnetic Silencing PA with the UK to develop technologies for OHIO Replacement and UK Successor programs. Conduct joint scale model stress magnetization and electric signature measurements with the UK to support future platform designs. Execute 1/4-scale LSV test to measure flow noise resulting from surface roughness to validate numerical prediction capabilities.</p> <p><b>FY 2012 Plans:</b> Conduct LSV maintenance, support, and operations and maintain LSV and ISMS test ranges. Support OHIO Class SSBN replacement design development and support VA Class Cost Reduction Sail Trials. Continue Electromagnetic Silencing PA with the UK to develop technologies for OHIO Replacement and Successor programs. Develop and validate performance of control algorithms for both magnetic and electric signatures.</p>				
<p><b>Title:</b> Total Ownership Cost/Affordability/Subtotal Cost</p> <p><b>Description:</b> Demonstrate technologies with potential to reduce total ownership costs of submarine systems by lowering construction costs, improving commonality of interfaces, extending the life of parts, and lowering life cycle maintenance requirements.</p> <p><b>FY 2010 Accomplishments:</b> Developed TEMPALT Technical Data Package (TDP) for an at-sea demonstration of a ball valve rotary Electric Actuation System (EAS) and Universal Modular Mast (UMM) linear EAS. Completed Concept Design Report for the elimination of the External Hydraulic System on VA Class Submarines. Built and lab tested advanced CO2 scrubber sorbent test cubes and installed OPALTs on an SSN (USS Scranton) and SSBN (USS Nevada) for at-sea testing. Transition agreement signed with VA Class Program (PMS-450) for incorporation of system as a Reduced Total Ownership Cost (RTOC) initiative on VA Block IV. Initiated design of a full capacity Technical Readiness Level (TRL)-6 CO2 lab unit to assess the technology of solid sorbent material. Completed full-scale trials on SSN-688 and SSN-688I platforms to obtain data to support final recommendations relating to the maintenance associated with Main Ballast Tank (MBT) treatments with final recommendations to allow only partial replacement of some treatments during availabilities underway.</p> <p><b>FY 2011 Plans:</b></p>		13.115	3.118	2.584
		<b>Articles:</b> 0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>		<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p>Finalize updates to maintenance documentation for MBT damping configurations. Perform Navy land-based test and evaluation of the UMM linear EAS. Install UMM linear EAS and ball valve rotary EAS TEMPALTs on USS Missouri to demonstrate electrically-actuated systems at-sea. Continue at-sea evaluation of advanced carbon dioxide (CO2) test cubes. Develop the system procurement specification, and design and build a full capacity CO2 scrubber prototype TRL-6 for further technical evaluation of solid sorbent technology. Continue assessment of total ownership cost reduction opportunities for in-service submarines to reduce current and future submarine maintenance cost.</p> <p><b>FY 2012 Plans:</b> Design and build a full-capacity advanced CO2 scrubber TRL-9 prototype and perform vendor test and evaluation. The TRL-9 prototype is the VA Class Block IV qualified version. Monitor and record data on ball valve rotary EAS and UMM linear EAS TEMPALTs during at-sea demonstrations.</p>				
<p><b>Title:</b> Advanced Propulsion/Ship Concept Developments/Subtotal Cost</p> <p align="right"><b>Articles:</b></p>				17.542
				7.079
				4.534
<p><b>Description:</b> Overcome technological barriers that have significant impact on submarine HM&amp;E systems so as to enable design options for a submarine with VIRGINIA Class capability in two technical areas: Shaftless Propulsion and Radical Ship HM&amp;E Infrastructure Reduction. Develop submarine alternative propulsion and stern configurations with potential to significantly reduce submarine acquisition costs. Demonstrate critical performance parameters through appropriate scale demonstrators in realistic environmental conditions. Evaluate integration of technologies and approaches for cost reduction in future submarines. Develop understanding of ship concept studies and submarine cost drivers and model analysis. Develop and demonstrate technologies for future submarines in areas of hull and platform technologies, propulsors, ship control, electric actuation, sensors, and self defense. This work will apply to future submarine designs including the long-lead concept work on the OHIO Replacement Program. Evaluate current platforms via full scale signature measurement trials to guide future R&amp;D investments.</p> <p><b>FY 2010 Accomplishments:</b> Continued partnership with DARPA on Tango Bravo (TB) projects. Continued demonstration and performance testing of TB Shaftless Propulsion prototype and direct drive motor for X-Planes control surface electric actuation. For TB, performed motor structural acoustic design and testing. For the Bow Plane effort, completed specifications, arrangement drawings, safety assessment reports, fabricated the design, performed test and evaluation, and completed OPALT TDP for bow plane control surface electric actuator demonstration on a VA Class submarine. Initiated preliminary multi-material characterization/construction and demonstration of multi-material beams, and propulsor design tool for Hybrid Multi-Material Rotor (HMMR).</p> <p><b>FY 2011 Plans:</b></p>				0
				0
				0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continued partnership with DARPA on TB Shaftless Propulsion projects. Continue demonstration and performance testing of TB Shaftless Propulsion prototype. Complete fabrication of Retractable Bow Planes (RBP) OPALT to demonstrate bow plane control surface Electric Actuation System (EAS) on a VA Class submarine. Execute full scale electromagnetic signature trials on in-service submarines to guide R&D investments. Continue preliminary multi-material characterization/construction and demonstration of multi-material beams, and propulsor design tool for HMMR.  <b><i>FY 2012 Plans:</i></b> Install OPALT to demonstrate bow plane control surface EAS on a VA Class Submarine. Continue demonstration and performance testing of TB Shaftless Propulsion prototype and perform motor structural acoustic analysis. Continue partnership with DARPA on HMMR program to include delivery of coupled design software tool sets and multi-material characterization.			
<b>Accomplishments/Planned Programs Subtotals</b>	72.544	42.515	33.889

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

N/A

**D. Acquisition Strategy**

F2033: Sole source Concept Formulation (CONFORM) contracts with the only two submarine design/construction shipyards, General Dynamics Electric Boat (GDEB) and Northrop Grumman Shipbuilding Newport News (NGNN). Engagement with industry to build vendor base and support development of R&D products for enhanced submarine capability via competitively awarded Small Business Innovation Research (SBIR) contracts to support Hull Mechanical & Electrical systems.

**E. Performance Metrics**

- To enable transition of a minimum of three technology challenge solutions supporting emergent war fighter needs.
- Sustain critical one of a kind national R&D hydroacoustic infrastructure enabling the design and assessment of VIRGINIA Class cost reduction and the OHIO Replacement designs for affordability.
- Refine the design of the Advanced Carbon Dioxide Removal System (ACRU) CO2 Scrubber System based on at-sea testing of new solid sorbent materials and the removal of liquid amine system from future submarines.
- Install and perform three at-sea demonstrations for electric actuation of critical ship control and ship system operational components in support of the OHIO Replacement and follow-on VIRGINIA Class Block Upgrades.
- Assess as-built VIRGINIA and OHIO Class SSBN/SSGN submarine for design drivers/design tools and model validation to define R&D needs for OHIO Class Replacement component development and technical design maturity.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	MIPR	DARPA:Arlington, VA	-	1.084	Apr 2011	-		-		-	Continuing	Continuing	Continuing
Product Development	SS/CPFF	NGSB:Newport News, VA	3.082	0.250	Apr 2011	0.394	Dec 2011	-		0.394	Continuing	Continuing	Continuing
Product Development	WR	NSWC:Dahlgren, VA	5.241	-		-		-		-	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Kollmorgen:N. Hampton, MA	1.100	-		-		-		-	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Oceaneering:Chesapeake, VA	1.900	-		-		-		-	0.000	1.900	1.900
Product Development	SS/CPFF	Boeing:St. Louis, MO	0.925	-		-		-		-	0.000	0.925	0.925
Product Development	SS/CPFF	EB:Groton, CT	29.472	6.809	Jun 2011	3.429	Mar 2012	-		3.429	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Raytheon:Portsmouth, RI	16.034	-		-		-		-	Continuing	Continuing	Continuing
Product Development	WR	NSWC:Carderock, MD	60.613	8.570	Jun 2011	5.007	Mar 2012	-		5.007	Continuing	Continuing	Continuing
Product Development	SS/CPFF	ARL/PSU:State College, PA	4.387	0.400	Mar 2011	0.700	Jan 2012	-		0.700	Continuing	Continuing	Continuing
Product Development	SS/CPFF	UT/ARL:Austin, TX	6.050	-		-		-		-	Continuing	Continuing	Continuing
Product Development	SS/CPFF	JHU/APL:Laurel, MD	15.594	0.200	May 2011	-		-		-	Continuing	Continuing	Continuing
Product Development	Various	Various:Various	29.489	2.435	Jun 2011	1.168	Mar 2012	-		1.168	Continuing	Continuing	Continuing
Product Development	WR	NUWC:Newport, RI	46.034	6.755	Jun 2011	5.671	Mar 2012	-		5.671	Continuing	Continuing	Continuing
Product Development	WR	ONR:Arlington, VA	8.066	-		-		-		-	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Lockheed Martin:Bethesda, MD	8.934	-		-		-		-	0.000	8.934	8.934
Product Development	WR	SPAWAR:San Diego, CA	5.850	-		-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			242.771	26.503		16.369		-		16.369			

**Remarks**

Various/VAR is used to group multiple activities with small funding levels. Activities will be incrementally funded. The award dates reflect the latest incremental portion funds will obligate.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Engineering Support	SS/CPFF	Various:Various	7.512	0.885	Jun 2011	0.885	Dec 2011	-		0.885	Continuing	Continuing	Continuing
Government Engineering Support	WR	Various:Various	4.018	0.335	Jun 2011	0.780	Dec 2011	-		0.780	Continuing	Continuing	Continuing
Travel	WR	NAVSEA HQ:Not Specified	0.409	0.100	Jun 2011	0.100	Nov 2011	-		0.100	Continuing	Continuing	Continuing
Acquisition Workforce	Various	Not Specified:Not Specified	0.293	-		-		-		-	0.000	0.293	0.293
<b>Subtotal</b>			12.232	1.320		1.765		-		1.765			

**Remarks**

Various/VAR is used to group multiple activities with small funding levels.  
Activities will be incrementally funded. The award dates reflect the latest incremental portion funds will obligate.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	SS/CPFF	EB:Groton, CT	4.627	0.219	Jun 2011	3.141	Mar 2012	-		3.141	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	Raytheon:Portsmouth, VA	9.104	-		-		-		-	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAVAIR:Patuxent, MD	2.593	-		-		-		-	Continuing	Continuing	Continuing
Developmental Test & Evaluation	Various	Various:Various	5.236	1.136	Jun 2011	-		-		-	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NUWC:Newport, RI	2.372	7.749	Jun 2011	6.523	Mar 2012	-		6.523	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC:Carderock, MD	7.667	5.588	Jun 2011	6.091	Mar 2012	-		6.091	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	NGSB:Newport News, VA	0.783	-		-		-		-	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	SS/CPFF	JHU/ARL:Laurel, MD	0.305	-		-		-		-	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	ARL/PSU:State College, PA	0.720	-		-		-		-	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC:Dahlgren, VA	1.320	-		-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			34.727	14.692		15.755		-		15.755			

**Remarks**  
 Various/VAR is used to group multiple activities with small funding levels.  
 Activities will be incrementally funded. The award dates reflect the latest incremental portion funds will obligate.

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	289.730	42.515	33.889	-	33.889			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603561N: *(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT*

**PROJECT**

2033: *Adv Submarine Systems Development*

<b>FISCAL YEARS</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>
<b><u>PAYLOADS &amp; SENSORS</u></b>							
<b><u>PROJECT</u></b>							
Small Missile Encapsulation Demonstration	Full-Scale Test						
Water-Piercing Missile Launch Demonstration and fly-out	Prototype Launcher Design CDR and fly-out test	Final Report					
Innovation Technology Transition					Transitions SBIR and IRAD projects		
Irregular Warfare Technology Development	Develop/Test/Transition						
Towed Array Handler and In-Service Reliability			Concept Development	Requirements Definition	Modeling & Simulation	ADM Development	
<b><u>ADV PROPULSION/SHIP</u></b>							
<b><u>CONCEPT DEV PROJECT</u></b>							
Tango Bravo Shaftless Propulsion		Prototype Demo					
Electric Control Surface Actuation Demonstrator (Bow Plane OPALT)	Complete Specs/drawings, design, T&E, complete	Fabricate OPALT TDP	Install OPALT	Monitor at-sea	Monitor at-sea	Monitor at-sea	Transition to VA Class Block IV & OR
ONR FNC Advanced Material Propeller (AMP)						Advanced Material Development	
Hybrid Multi-Material Rotor (HMMR) Dev.	Coupled Tool Architecture Build Full Thickness	Multi-material characterization Couple design tools					

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

**APPROPRIATION/BUDGET ACTIVITY**

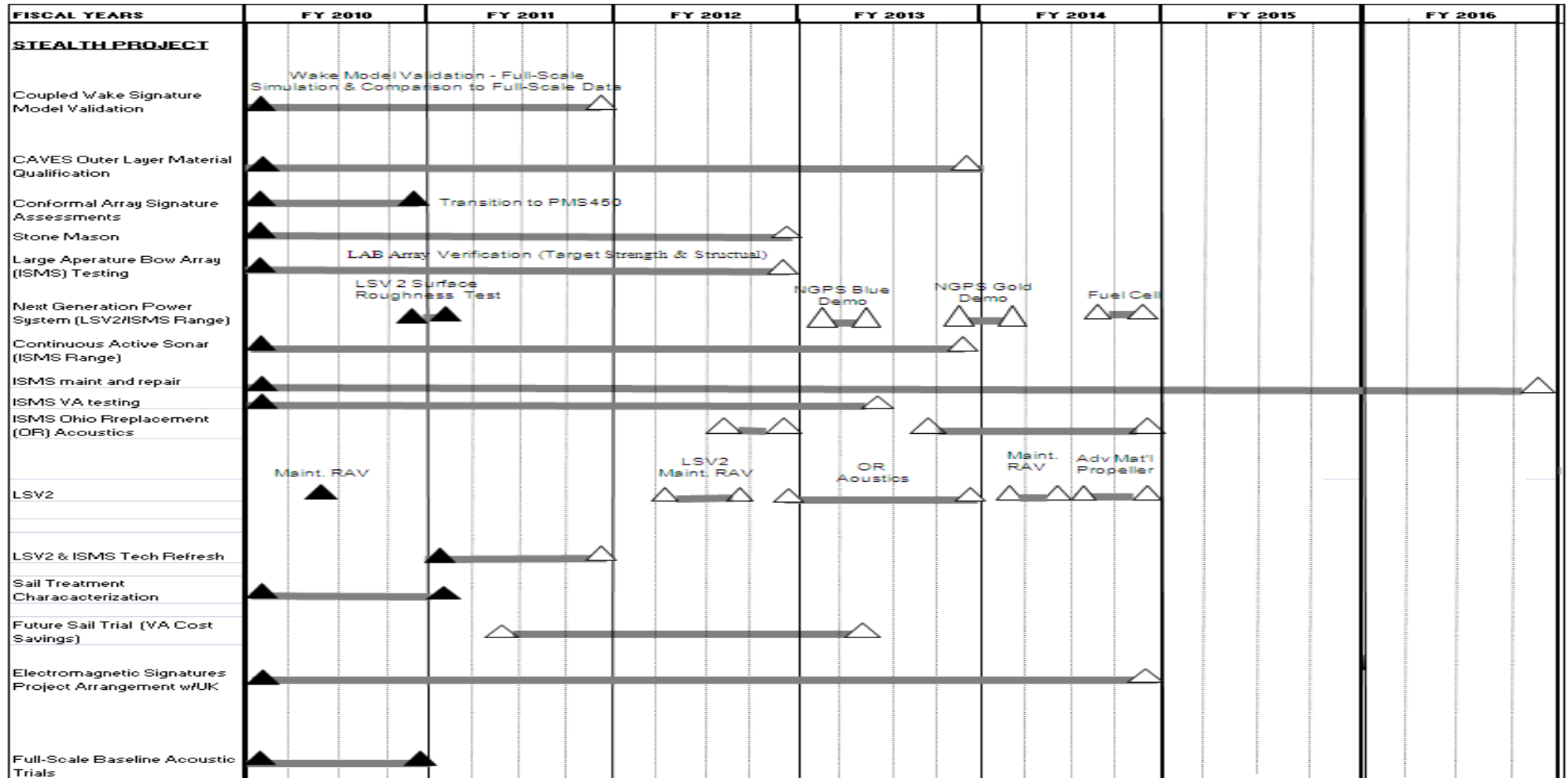
1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0603561N: (U)ADVANCED SUBMARINE  
 SYSTEM DEVELOPMENT

**PROJECT**

2033: Adv Submarine Systems Development

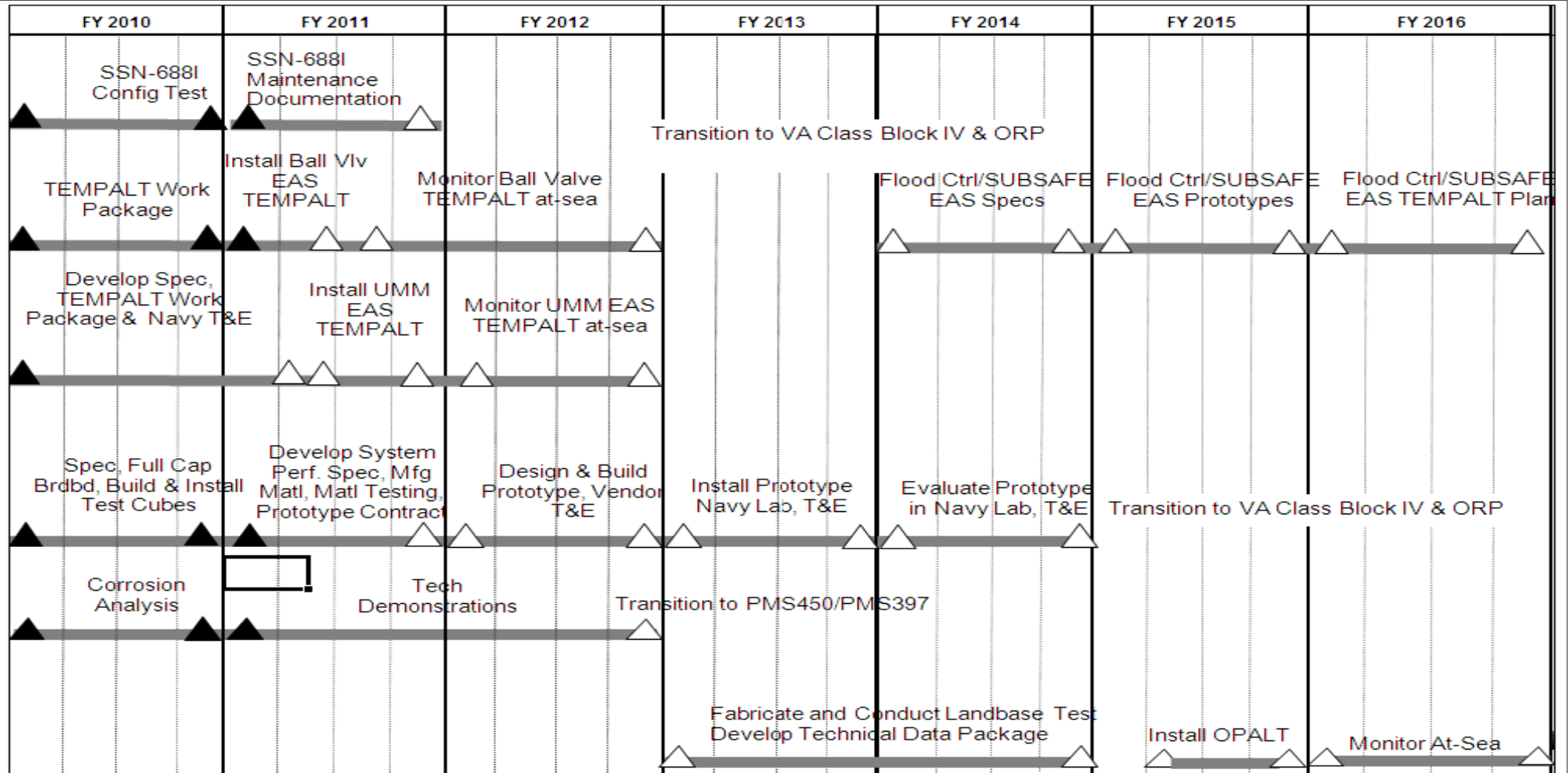


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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2033</b>				
P&S Small Missile Encapsulation Demonstration Full-Scale Testing	2	2010	4	2010
P&S Water Piercing Missile Launch Demo Prototype Launcher Critical Design Review, Fly-out test and final report	2	2010	4	2010
P&S Innovation Technology Transition SBIR/IRAD projects	1	2010	4	2016
P&S Irregular Warfare Technology Development/Test/Transition	1	2010	4	2011
P&S Towed Array Handling System Concept Development	1	2012	2	2013
P&S Towed Array Handling System Requirements Definition	3	2013	2	2014
P&S Towed Array Handling System Modeling & Simulation	3	2014	2	2015
P&S Towed Array Handling System ADM Development	2	2015	4	2016
AP Tango Bravo Shaftless Propulsion Prototype Demo	1	2010	4	2012
AP Electric Control Surface Actuation Demo (Bow Plane OPALT) Fabricate/Design/T&E/Dev TDP	1	2010	4	2011
AP Electric Control Surface Actuation Demo (Bow Plane OPALT) Install OPALT	1	2012	3	2012
AP Electric Control Surface Actuation Demo (Bow Plane OPALT) Monitor At-Sea	1	2013	4	2016
AP Hybrid Multi-Material Rotor Development , Coupled Tool Architecture/Build Full Thickness Beams	1	2010	2	2011
AP Hybrid Multi-Material Rotor Development , Mat'l Characteristics/ Coupled Design Tools	3	2011	4	2012
AP ONR FNC AMP Advanced Material Propeller Development	1	2014	4	2016
STEALTH Coupled Wake Signature Model Validation	1	2010	4	2011
STEALTH CAVES Outer-Layer Material Qualification	1	2010	4	2013
STEALTH Conformal Array Signature Assessment	1	2010	4	2010

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
STEALTH Stone Mason	1	2010	4	2012
STEALTH ISMS Large Aperture Bow Array Target Strength and Structural Testing	1	2010	4	2012
STEALTH LSV/ISMS Next Gen Pwr Sys Assmt Range Testing - LSV Surf Roughness	4	2010	1	2011
STEALTH LSV/ISMS Next Gen Pwr Sys Assmt Range Testing - NGPS Blue Demo	1	2013	2	2013
STEALTH LSV/ISMS Next Gen Pwr Sys Assmt Range Testing - NGPS Gold Demo	4	2013	1	2014
STEALTH LSV/ISMS Next Gen Pwr Sys Assmt Range Testing - Fuel Cell	3	2014	4	2014
STEALTH ISMS Continuous Active Sonar Range	1	2010	4	2013
STEALTH ISMS Maint & Repair	1	2010	4	2016
STEALTH ISMS VA Class Testing	1	2010	2	2013
STEALTH ISMS Ohio Replacement Acoustics	3	2012	4	2012
STEALTH ISMS Ohio Replacement Acoustics phase 2	3	2013	4	2014
STEALTH LSV2 Maintenance RAV	2	2010	2	2010
STEALTH LSV2 Maintenance RAV phase 2	2	2012	3	2012
STEALTH LSV2 Ohio Replacement Acoustics	4	2012	4	2013
STEALTH LSV2 Maintenance RAV phase 3	1	2014	2	2014
STEALTH LSV2 Advanced Material Propeller	3	2014	4	2014
STEALTH LSV2 & ISMS Technology Refresh	1	2011	4	2011
STEALTH Sail Treatment Characterization	1	2010	1	2011
STEALTH Future Sail Trial VA Class	2	2011	2	2013
STEALTH Electromagnetic Signatures Project Arrangement (PA) w/UK	1	2010	4	2014
STEALTH Full-Scale Baseline Acoustic Trails	1	2010	4	2010
TOC SSN-688I Class Main Ballast Tank Damping Treatment Configuration Test	1	2010	4	2010
TOC SSN-688I Class Main Ballast Tank Damping Treatment Finalize Maint. Documentation	1	2011	4	2011

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TOC Hydraulic Elimination (Internal EA Systems) Develop Ball Valve TEMPALT Package	1	2010	4	2010
TOC Hydraulic Elimination (Internal EA Systems) Install Ball Valve TEMPALT	1	2011	2	2011
TOC Hydraulic Elimination (Internal EA Systems) Monitor Ball Valve TEMPALT At-Sea	3	2011	4	2012
TOC Hydraulic Elimination (Internal EA Systems) Develop Flood Control/SUBSAFE Spec	1	2014	4	2014
TOC Hydraulic Elimination (Internal EA Systems) Develop Flood Control/SUBSAFE Prototypes	1	2015	4	2015
TOC Hydraulic Elimination (Internal EA Systems) Develop Flood Control/SUBSAFE TEMPALT Plan	1	2016	4	2016
TOC Hydraulic Elimination (External EAS (UMM Only) Develop UMM Spec; TEMPALT and Navy T&E	1	2010	2	2011
TOC Hydraulic Elimination (External EAS (UMM Only) Install UMM TEMPALT	2	2011	4	2011
TOC Hydraulic Elimination (External EAS (UMM Only) Monitor UMM TEMPALT At-Sea	1	2012	4	2012
TOC Advanced CO2 Removal System Develop Spec and Breadboard, Build and Install Test Cubes	1	2010	4	2010
TOC Advanced CO2 Removal System Develop Perf Spec/ Manufacture and Test Material, Award Prototype Contract	1	2011	4	2011
TOC Advanced CO2 Removal System Design and Build Prototype, Vendor Test & Evaluation (T&E)	1	2012	4	2012
TOC Advanced CO2 Removal System Install & Test Prototype in Navy Lab, T&E	1	2013	4	2013
TOC Advanced CO2 Removal System Evaluate Prototype in Navy Lab, T&E	1	2014	4	2014
TOC Life Cycle Maintenance Cost Reduction Corrosion Analysis	1	2010	4	2010
TOC Life Cycle Maintenance Cost Reduction Technical Demonstration	1	2011	4	2012
TOC ONR FNC Electric Actuation Fabricate and Conduct Land Based Test/Dev TDP	1	2013	4	2014
TOC ONR FNC Electric Actuation Install OPALT	2	2015	4	2015

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 2033: <i>Adv Submarine Systems Development</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
TOC ONR FNC Electric Actuation Monitor At-Sea	1	2016	4	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>				<b>PROJECT</b> 3197: <i>Undersea Superiority</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3197: <i>Undersea Superiority</i>	30.798	21.983	-	-	-	-	-	-	-	0.000	52.781
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project Unit 3197: This Project supports Navy Undersea Superiority through the application of advanced development and testing of organic and offboard sonar and tactical control systems. This Project transitions technologies developed by Navy technology bases, the private sector, ONR, Future Naval Capabilities, and DARPA. This non-acquisition Project addresses technology challenges to improve Anti-Submarine Warfare (ASW) in littoral and open ocean environments for a variety of operational missions by relevant tactical ASW capabilities. Prototype hardware/software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Technologies are selected by the CNO's ASW Initiative which was established to support the CNO's vision to "fundamentally change the way ASW is currently conducted to render the enemy submarine irrelevant against US and coalition forces". This Project matures promising Undersea Warfare (USW) technologies via an incremental development methodology, establishes military utility through sea testing and self assessment, and supports transition to production as merited by results.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Undersea Superiority	30.798	21.983	-
<b>Articles:</b>	0	0	
<b>FY 2010 Accomplishments:</b> Continued development of Deep Water Active Detection System (DWADS) to include integration, prototyping, land-based and at-sea testing of Advanced Development Models (ADM) and conduct of Military Utility Assessments (MUAs). Continued development of Distributed Netted Sensors (DNS) Control and Communications capabilities and Reliable Acoustic Path Vertical Line Array (RAP VLA), fabricated and tested prototype, and conducted at-sea acoustic test. Continued studies, analysis and assessments of potential transformational ASW technologies.			
<b>FY 2011 Plans:</b> Fabricate and test upgraded version of DWADS design based on initial at-sea and MUA test results. Conduct at-sea demonstration of updated DWADS. Continue development of RAP VLA and conduct at-sea demonstration of a fully functioning prototype. Continue studies, analysis and assessments of potential transformational ASW technologies.			
<b>Accomplishments/Planned Programs Subtotals</b>	30.798	21.983	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3197: <i>Undersea Superiority</i>

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

N/A

**D. Acquisition Strategy**

Use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

**E. Performance Metrics**

- Reliable Acoustic Path Vertical Line Array (RAP VLA) provides detection of quiet diesel submarines at ranges 3 to 7 times water depth. Continued RAP VLA development and conduct a Deep Digital Array sea test and an Engineering Integration test in FY10.
- Deep Water Active Detection System (DWADS) - participate in Distributed Netted System (DNS) 10-1 Prototype testing in Convergence Zone and Valiant Shield 10 with Integrated Units in FY10.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3197: <i>Undersea Superiority</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	C/CPFF	In Depth Engineering:VA	0.900	-		-		-		-	0.000	0.900	0.900
Product Development	C/CPFF	JHU/APL:MD	7.266	5.250	Dec 2010	-		-		-	0.000	12.516	12.516
Product Development	C/CPFF	Lockheed Martin:VA	9.975	9.700	Dec 2010	-		-		-	0.000	19.675	19.675
Product Development	C/CPFF	Lockheed Martin:CA	23.365	-		-		-		-	0.000	23.365	23.365
Product Development	WR	Marine Acoustics Inc.:NC	0.363	-		-		-		-	0.000	0.363	0.363
Product Development	WR	Naval Research Lab:DC	0.885	-		-		-		-	0.000	0.885	0.885
Product Development	WR	NUWC/Newport:RI	1.220	2.646	Oct 2010	-		-		-	0.000	3.866	3.866
Product Development	C/CPFF	Scientific Solutions Inc:NH	0.500	-		-		-		-	0.000	0.500	0.500
Product Development	MIPR	U.S. AFB/MIT Lincoln Labs:MA	1.200	-		-		-		-	0.000	1.200	1.200
<b>Subtotal</b>			45.674	17.596		-		-		-	0.000	63.270	63.270

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test and Evaluation	C/CPFF	JHU/APL:MD	5.580	2.200	Dec 2010	-		-		-	0.000	7.780	7.780
Test and Evaluation	WR	NUWC/Newport:RI	5.657	1.000	Oct 2010	-		-		-	0.000	6.657	6.657
Test and Evaluation	WR	SPAWAR, San Diego:CA	1.600	-		-		-		-	0.000	1.600	1.600
Test and Evaluation	MIPR	US AFB/MIT Lincoln Labs:MA	0.150	-		-		-		-	0.000	0.150	0.150
Test and Evaluation	C/CPFF	UT/ARL:TX	2.400	-		-		-		-	0.000	2.400	2.400
Test and Evaluation	WR	VAR:VAR*	4.591	0.727	Dec 2010	-		-		-	0.000	5.318	5.318
<b>Subtotal</b>			19.978	3.927		-		-		-	0.000	23.905	23.905

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3197: <i>Undersea Superiority</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	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.

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
Program Management Support	C/CPAF	BAE SYSTEMS:MD	0.800	0.400	Dec 2010	-		-		-	0.000	1.200	1.200	
Travel	WR	NAVSEA PEO IWS5:DC	0.070	0.060	Oct 2010	-		-		-	0.000	0.130	0.130	
<b>Subtotal</b>			0.870	0.460		-		-		-	0.000	1.330	1.330	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		66.522	21.983	-	-	0.000	88.505	88.505

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603561N: *(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT*

**PROJECT**

3197: *Undersea Superiority*

Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>DWADS</b>																												
Design/Development																												
Sea Test / MUA			▲					△																				
<b>RAP VLA</b>																												
Design/Development																												
Sea Test / MUA			▲					△																				

Note: Prior to FY09 this effort was funded via Project 2033.

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3197: <i>Undersea Superiority</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 3197</i></b>				
DWADS Design/Development	1	2010	3	2011
DWADS Fully Functional Prototype Sea Test/MUA	3	2010	4	2011
RAP/VLA Design Development	1	2010	3	2011
RAP/VLA Fully Functional Prototype Sea Test/MUA	3	2010	4	2011

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>				<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3220: <i>SBSD Advanced Submarine System Development</i>	363.371	493.028	781.575	-	781.575	857.497	1,064.225	786.691	748.848	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Sea Based Strategic Deterrent (SBSD) Advanced Submarine System Development program funding request supports the necessary design, systems engineering, prototyping, and vendor qualification activities needed to execute the schedule for Common Missile Compartment (CMC) design, whole ship design, and component technologies development for the next generation US ballistic missile submarine. This RDT&E program supports cooperation with the United Kingdom (UK) to maintain strategic deterrence, based on a single effort to develop a common missile compartment as agreed by the UK Secretary of State for Defense and the US Secretary of Defense in 2009.

The OHIO Replacement program strategy is to maximize the re-use of existing OHIO systems and new designs from VIRGINIA Class (as applicable), focus on Life Cycle Total Ownership Cost (TOC) affordability and meet the higher standards required for this SSBN to achieve mission success in a challenging environment.

The following key activities support a ship acquisition program to replace the OHIO Class SSBNs:

1. Design and development of a missile compartment, launch system and strategic support systems to meet US strategic requirements while cooperating with the UK on modernizing its strategic deterrent in accordance with Presidential direction (December 2006).
2. Analysis of Alternatives (AOA) completed with final brief to the Office of the Secretary of Defense (OSD) on May 20, 2009. The final AOA Report was completed in September 2009. AOA Sufficiency Review Letter was signed by OSD Director, Cost Assessment & Program Evaluation on December 8, 2009. The program completed a Milestone A (MSA) Defense Acquisition Board (DAB) review on December 9, 2010. The Acquisition Decision Memorandum (ADM) is expected to be signed in February 2011, approving MSA, and authorizing the program to enter the Technology Development phase.
3. Concept and System Definition for remaining portions of the ship will maintain synchronization with the CMC design efforts. This effort will be accomplished by the design/ build/ sustain approach modeled after the VIRGINIA Class program.
4. Development of advanced submarine platform technologies to provide capabilities needed to enhance platform operational effectiveness and minimize life cycle cost.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> SBSD Advanced Submarine System Development	363.371	493.028	781.575
<b>Articles:</b>	0	0	0
<b>Description:</b> SBSD Concept and System Definition Prototyping, and Technology Development Efforts.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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<p>The SBSB program supports design, systems engineering, prototyping, and vendor qualification activities needed to develop CMC design, the OHIO Replacement whole ship design, and component development. OHIO Replacement design efforts support decisions on missile tube hull insert manufacturing in FY 2010 and missile compartment construction strategy down-select in FY 2011. The SBSB design timelines are based on the approach proven on VIRGINIA Class Program, adjusted for the additional complexity of a missile compartment and Strategic Weapons Systems (SWS). Planned technical studies and prototyping are necessary to reduce risks associated with updating SSBN system designs for current technical standards and demonstrating design feasibility of technical options to inform the establishment of detailed requirements.</p> <p>The Navy is investing \$150M (\$50M/year in FY 2012-2014) in Design for Affordability (DFA) initiatives similar to those employed successfully for VIRGINIA Class, but will be further tailored to the uniqueness of OHIO Replacement to drive down overall program costs. Efforts will focus on reducing ship construction costs through implementing more effective design features to produce a more affordable/producible class. As part of this effort, alternative contracting strategies will be examined.</p> <p>Activities planned for FY 2010, FY 2011 and FY 2012 include the design of a common missile compartment to satisfy the requirements of both the US and the UK, to mature required technologies, and to re-host the TRIDENT II D5 Strategic Weapon System (Launcher, Fire Control and Navigation) while ensuring no degradation to D5 security, safety, and performance. In addition, whole ship design efforts are focused on technologies requiring significant development times and those technologies with early design impacts. These include propulsor development, ship control (e.g., control surfaces), and ship signatures. These technologies are critical to understand stealth capabilities for a ship class that will be in service until the 2080s. Ship concept design efforts include important pre-construction activities such as trade studies of ship requirements, risk characterization of technology options, improvement and validation of performance prediction tools, and improvement of design tools. Technology development will address maturation of technologies that must be mature to support ship design and construction schedules such as the propulsor, maneuvering/ship control, and signatures.</p> <p><b>FY 2010 Accomplishments:</b> Common Missile Compartment (CMC) Design and Prototyping (\$116.2M) - Initiated efforts for the design and development of the CMC to include: related sections of the ship specification, concept system design, prototype missile tube concept design and prototype missile tube/barrel quad pack design, and CMC system diagrams. Completed efforts related to full scale welding feasibility demonstration of four representative missile tube barrel quarter crown assemblies. Initiated casting vendor qualification and manufacturing fixture prototyping for validation of missile tube to missile tube quad production techniques. Fixture design and prototype efforts of the E Fixture (missile tube crown assembly; prototype), F Fixture (missile tube/hull cylinder integration; concept design), H Fixture (automated frame fabrication; concepts) and I Fixture (pressure hull shell fabrication; concepts). Initiated system engineering efforts to define the required CMC build strategy. Commence planning activities for CMC test facilities.</p>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
<p>Performed facility concept studies and facility outfit planning work. Initial exploration of robotic welding capabilities and techniques to support missile tube to keel weld butt.</p> <p>Ship Studies and Design (\$48.0M) - Initiated efforts for Rest of Ship concept development, Systems Integration, component design, system definition documents, system diagrams, ship arrangements, construction drawings, and studies to support CMC interfaces with the shipbuilder.</p> <p>NAVSEA R&amp;D and Prototyping (\$25.0M) - Initiated Technology Development efforts for corrosion control, undersea sensor suite, propulsor, shafting system, hydrodynamics, maneuvering, ship control, composites, component development, and ship signatures.</p> <p>Test and Evaluation (T&amp;E) (\$1.2M) - Initiated efforts to identify T&amp;E requirements for the program and interfaced with OSD oversight organizations for T&amp;E.</p> <p>Strategic Weapons System (SWS) Integration (\$98.6M) - Initiated system engineering efforts for the development of SWS system diagrams as they interface with the CMC. Initiated concept and design work to develop a missile launch tube test facility, test stand and refurbishment of a test vehicle to support launch system prototype effort and qualification.</p> <p>Systems Engineering / Program Management (\$74.4M) - Provided technical oversight including Program Office management and technical support from government laboratories for review, analysis and modeling.</p> <p><b>FY 2011 Plans:</b> CMC Design and Prototyping (\$209.4M) - Continue efforts for the design and development of the CMC to include; related sections of the ship specification, commence prototype missile tube detailed design and prototype missile quad pack design, and CMC system diagrams. On-site installation of the missile tube integration fixture and execution of the missile tube quarter crown and barrel prototype quad. Fixture design and prototype efforts. E Fixture (missile tube crown assembly), F Fixture (missile tube/hull cylinder integration; preliminary design), H Fixture (automated frame fabrication; concepts continued) and I Fixture (pressure hull shell fabrication; concepts continued). Continue casting vendor qualification and concept design of missile tube quad to hull manufacturing prototypes to validate planned missile compartment production techniques. Continue system engineering efforts to refine the required CMC build strategy. Conduct missile tube requirements review and commence missile tube detailed design. Continue planning activities for CMC test facilities. Perform facility development studies and facility outfit planning activities. Initial planning, development and testing of missile tube to keel robotic welding.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
<p>Ship Studies and Design (\$47.6M) - Continue Rest of Ship concept development, system integration, component design, system definition documents, system diagrams, ship arrangements, construction drawings, and studies to support CMC interfaces with the shipbuilder.</p> <p>NAVSEA R&amp;D and Prototyping (\$35.1M) - Continue Technology Development efforts for corrosion control, undersea sensor suite, propulsor, shafting system, hydrodynamics, maneuvering, ship control, composites, component development, and ship signatures.</p> <p>T&amp;E (\$2.9M) - Continue efforts to identify T&amp;E requirements for the program and interface with OSD oversight organizations for T&amp;E.</p> <p>SWS Integration (\$102.6M) - Continue system engineering efforts for the development of SWS system diagrams as they interface with the CMC. Continue concept and design work to develop a missile launch tube test facility and test stand including refurbishment of a test vehicle to support launch system prototype effort and qualification. Conduct evaluation of Missile gas temperature test data acquired during Demonstration and Shakedown Operations (DASO) to verify missile performance in re-hosted environment. Continue system engineering design efforts associated with the physical arrangement drawings of missile tubes and SWS hardware within the CMC and Missile Control Center (MCC).</p> <p>Systems Engineering / Program Management (\$95.4M) - Continue to provided technical oversight including Program Office management and technical support from government laboratories for review, analysis and modeling. Commence Design for Affordability (DFA) planning activities.</p> <p><b>FY 2012 Plans:</b> CMC Design and Prototyping (\$297.1M) - Continue efforts for the design and development of the CMC to include; completion of sections of the CMC ship specification, drawings of the first article missile tube quad pack, and CMC system diagrams. Approve missile tube drawings and finalize CMC arrangements. Continue validation of missile tube to missile tube quad pack production techniques. Continue validation and verification of the casting design and preliminary design of the missile tube quad to hull manufacturing fixture prototypes to validate planned missile compartment production techniques. E Fixture (missile tube crown refit for 87 inch tube). F Fixture (missile tube/hull cylinder integration; detailed design), H Fixture (automated frame fabrication; preliminary design) and I Fixture (pressure hull shell fabrication; preliminary design). Continue system engineering efforts to define the required CMC testing during the build cycle. Commence detailed planning activities for CMC test facilities. Perform facility arrangements, test items and facility outfit detailed planning activities. Issue facility design award. Continue development and testing of missile tube to keel robotic welding techniques to support process certification.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Ship Studies and Design (\$41.3M) - Continue Rest of Ship concept development, system integration, component design, system definition documents, system diagrams, ship arrangements, construction drawings, and studies to support CMC interfaces with the shipbuilder.			
NAVSEA R&D and Prototyping (\$128.5M) - Continue Technology Development efforts for corrosion control, undersea sensor suite, propulsor, shafting system, hydrodynamics, maneuvering, ship control, composites, component development, and ship signatures.			
T&E (\$3.6M) - Continue efforts to identify T&E requirements for the program and interface with OSD oversight organizations for T&E.			
SWS Integration (\$151.7M) - Continue system engineering efforts required for the technical repackaging of the TRIDENT D5 SWS on the OHIO Replacement submarine; including review and modification of system interface drawings. Continue concept and design work to develop a missile launch tube test facility and test stand including refurbishment of a test vehicle to support launch system prototype effort and qualification. Initiation of system engineering efforts related to development of flight Test Instrumentation hardware, Special Test Vehicles, shore based and shipset mechanical and electrical support equipment, and flight test hardware. Complete system engineering design efforts associated with the physical arrangement drawings for SWS equipment within the CMC and MCC.			
Systems Engineering / Program Management (\$159.4M) - Continue to provided technical oversight including Program Office management and technical support from government laboratories for review, analysis and modeling. Commence execution of DFA program and design initiatives.			
<b>Accomplishments/Planned Programs Subtotals</b>	363.371	493.028	781.575

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

N/A

**D. Acquisition Strategy**

The missile compartment will be designed and developed to support the US and UK in development of the OHIO Replacement and Successor SSBN programs. It also enables the potential for a common US-UK CMC production, which would maximize the benefit of the ongoing US-UK partnership in strategic deterrence. Whole ship concepts and System Definition efforts will be performed primarily by the US submarine shipyards. R&D efforts will be performed by Navy laboratories, shipyards, private industry, and University Affiliated Research Centers.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>

**E. Performance Metrics**

Updated Integrated Master Schedule, and CMC build strategy down-select. Development of Signature Management efforts to address knowledge gap, Concepts for Propulsor and Shafting, and Design Guidance and Interface Control Requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	SS/CPFF	Ship Design Contractor:EB	97.452	47.600	Mar 2011	43.617	Oct 2011	-		43.617	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Ship Design Contractor DFA Support:TBD	-	-		37.500	Jan 2012	-		37.500	Continuing	Continuing	Continuing
Product Development	WR	NSWC:Carderock, MD	28.791	76.940	Mar 2011	152.157	Oct 2011	-		152.157	Continuing	Continuing	Continuing
Product Development	WR	NSWC DFA Support:Carderock, MD	-	-		2.500	Jan 2012	-		2.500	Continuing	Continuing	Continuing
Product Development	SS/CPFF	ARL Penn State University:State College, PA	0.738	1.921	Mar 2011	0.356	Jan 2012	-		0.356	0.000	3.015	2.310
Product Development	SS/CPFF	EB:Groton, CT	4.887	7.439	Mar 2011	36.703	Oct 2011	-		36.703	Continuing	Continuing	Continuing
Product Development	SS/CPFF	NGMS:Sunnyvale, CA	30.935	15.742	Mar 2011	33.430	Oct 2011	-		33.430	Continuing	Continuing	Continuing
Product Development	WR	NUWC:Newport, RI	6.174	18.275	Mar 2011	18.711	Oct 2011	-		18.711	Continuing	Continuing	Continuing
Product Development	WR	NUWC DFA Support:Newport, RI	-	-		10.000	Jan 2012	-		10.000	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Missile Comp Design Contractor-EB:Groton, CT	116.159	209.359	Mar 2011	297.113	Oct 2011	-		297.113	Continuing	Continuing	Continuing
Product Development	SS/CPFF	JHU/APL:Laurel, MD	5.865	4.200	Mar 2011	6.097	Oct 2011	-		6.097	Continuing	Continuing	Continuing
Product Development	SS/CPFF	Draper Labs:Cambridge, MA	-	2.760	Mar 2011	3.500	Oct 2011	-		3.500	Continuing	Continuing	Continuing
Product Development	SS/CPFF	LMFS:NY	3.550	5.022	Mar 2011	5.254	Oct 2011	-		5.254	Continuing	Continuing	Continuing
Product Development	Various	NAVSEA:Various	1.216	0.654	Mar 2011	4.328	Oct 2011	-		4.328	Continuing	Continuing	Continuing
Product Development	WR	NOTU:FL	-	4.400	Mar 2011	5.000	Oct 2011	-		5.000	Continuing	Continuing	Continuing
Product Development	SS/CPFF	LMMSC:CA	21.749	14.132	Mar 2011	29.500	Oct 2011	-		29.500	Continuing	Continuing	Continuing
Product Development	C/CPFF	GDAIS:MA	11.318	23.475	Mar 2011	26.050	Jan 2012	-		26.050	Continuing	Continuing	Continuing
Product Development	SS/CPFF	IEC:VA	3.522	1.200	Mar 2011	1.700	Oct 2011	-		1.700	Continuing	Continuing	Continuing
Product Development	WR	NSWC:VA	0.910	2.100	Mar 2011	4.720	Oct 2011	-		4.720	Continuing	Continuing	Continuing
Product Development	SS/CPFF	BAE:MD	2.098	6.826	Mar 2011	6.577	Oct 2011	-		6.577	Continuing	Continuing	Continuing
Product Development	SS/CPFF	BNA:CA	1.248	2.239	Mar 2011	3.140	Oct 2011	-		3.140	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Product Development	WR	NSWC Crane:IN	6.853	4.269	Mar 2011	6.100	Oct 2011	-		6.100	Continuing	Continuing	Continuing
Product Development	WR	NWC CL:CA	2.500	-		-		-		-	0.000	2.500	2.500
Product Development	SS/CPFF	SPA:VA	1.200	-		-		-		-	0.000	1.200	1.200
Product Development	Various	SSP:Various	6.569	16.212	Mar 2011	20.540	Oct 2011	-		20.540	Continuing	Continuing	Continuing
<b>Subtotal</b>			353.734	464.765		754.593		-		754.593			

**Remarks**  
Note: Various is used for multiple activities with different award dates

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Test and Evaluation Support	C/CPFF	T&E Support:Various	0.454	1.100	Mar 2011	1.442	Oct 2011	-		1.442	Continuing	Continuing	Continuing
Government Test and Evaluation Support	WR	T&E Support:Various	0.771	1.810	Mar 2011	2.153	Oct 2011	-		2.153	Continuing	Continuing	Continuing
Travel	WR	NAVSEA HQ:Washington, D.C.	0.100	0.150	Mar 2011	0.083	Oct 2011	-		0.083	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.325	3.060		3.678		-		3.678			

**Remarks**  
Note: Various is used for multiple activities with different award dates. Contractor Test & Evaluation Support cost category item funds will be sent to Shipbuilder and Support Contractors to be determined. Government Test and Evaluation Support cost category item funds will be sent to several Navy activities to be determined.

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Contractor Management Support	C/CPFF	Various:Multiple Awards	5.727	14.115	Mar 2011	11.917	Oct 2011	-		11.917	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>
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Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Management Support	WR	Various: NSWC Carderock, MD	2.285	10.838	Mar 2011	11.052	Oct 2011	-		11.052	Continuing	Continuing	Continuing
Travel	WR	NAVSEA HQ: Washington, D.C.	0.300	0.250	Mar 2011	0.335	Oct 2011	-		0.335	Continuing	Continuing	Continuing
<b>Subtotal</b>			8.312	25.203		23.304		-		23.304			

**Remarks**  
 Note: Various is used for multiple activities with different award dates

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	363.371	493.028	781.575	-	781.575			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603561N: *(U)ADVANCED SUBMARINE  
 SYSTEM DEVELOPMENT*

**PROJECT**

3220: *SBSD Advanced Submarine System  
 Development*

FISCAL YEARS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b><u>SBSD PROJECT</u></b>							
Concept Studies							
Platform Technology Demonstrations							
Strategic Systems Technology Demonstration							
Missile Compartment Design							
Whole Boat Concept and System Definition							
Prototyping Effort							
Design for Affordability							



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 3220: <i>SBSD Advanced Submarine System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3220</b>				
Concept Studies	1	2010	4	2012
Platform Technology Demonstrations	1	2010	4	2016
Strategic Systems Technology Demonstrations	1	2010	4	2016
Missile Compartment Design	1	2010	4	2016
Whole Boat Concept and System Definition	1	2010	4	2016
Prototyping Effort	2	2010	4	2016
Design for Affordability	2	2012	4	2014

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	7.170	-	-	-	-	-	-	-	-	0.000	7.170
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add Projects.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> SSBN(X) Systems Development <b>FY 2010 Accomplishments:</b> The FY10 Congressional plus-up for SSBN(X) Systems Development will execute concept studies to narrow the design space, execute technology trade-off studies, and execute research and development for selected submarine technologies. This plus-up will be executed by the submarine design industrial base for the timely development of technology options and will reduce the risk of their successful insertion into the OHIO Replacement design.	1.992	-
<b>Congressional Add:</b> Underwater Explosion Modeling for Non-Pressure Hull Fairing <b>FY 2010 Accomplishments:</b> The FY10 Congressional plus-up for Underwater Explosion Modeling for Non-Pressure Hull Fairing will allow execution of underwater shock (UNDEX) modeling & simulation of composite non-pressure hull (NPH) structures, to enhance UNDEX survivability of lightweight/low cost composite fairing structures for application to US Navy Ohio Class Replacement.	1.992	-
<b>Congressional Add:</b> High Torque, Low Speed, Direct Drive Electric Motor Technology <b>FY 2010 Accomplishments:</b> FY10 Congressional Add: Completed design changes and lab testing on the Moog Flo-tork Electric Actuation System (EAS).	1.593	-
<b>Congressional Add:</b> Submarine Fatline Vector Sensor Towed Array <b>FY 2010 Accomplishments:</b> FY10 Congressional Add: Funds were used to support the Navy's Sea Power 21 Anti-Submarine Warfare (ASW) mission objectives via the development and demonstration of a Vector Sensor Towed Array (VSTA) which provides improved gain and better Target Motion Analysis (TMA). Improvements included steering in the direction of interfering sources, and instantaneously resolving right-left ambiguity of a single line array without the need for ship maneuvering.	1.593	-
<b>Congressional Adds Subtotals</b>	7.170	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603561N: <i>(U)ADVANCED SUBMARINE SYSTEM DEVELOPMENT</i>	9999: <i>Congressional Adds</i>

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Add Projects.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603562N: <i>Submarine Tactical Warfare Sys</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	10.869	5.590	9.253	-	9.253	9.444	9.618	9.832	10.018	Continuing	Continuing
0770: <i>Adv Sub Supp Equip Prog</i>	4.356	-	3.910	-	3.910	4.030	4.077	4.169	4.253	Continuing	Continuing
1739: <i>Submarine Arctic W/F Development</i>	5.716	5.590	5.343	-	5.343	5.414	5.541	5.663	5.765	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797

**A. Mission Description and Budget Item Justification**

The Submarine Tactical Warfare Systems program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP) and the Submarine Special Operations Support Program. The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D). In order to provide improved operational effectiveness, R&D efforts are focused on Advanced Imaging Developments and Advanced Electronic Warfare Support (ES) Developments. A continuing need exists to improve these capabilities in view of the advancements in potential imaging counter detection, the need to support specialized missions, and the increasingly dense and sophisticated electronic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Ongoing developments in 360 degree imaging systems and radar range finding (e.g., PATRIOT) technologies are supporting these needs.

The Submarine Arctic Warfare Development program responds to the increased threat of naval activity in the littoral and the continuing threat of submarine and surface ship activity in regions of the world through the development of advanced submarine R&D technology to provide improved operational capability in shallow water regions. Particular emphasis is placed in the areas of sonar operability and maintainability, littoral operations, mine warfare, tactical surveillance, weapon utility, and other submarine support missions. Efforts include assessment of combat system effectiveness, development of Arctic specific improvements for existing sonars and weapons, development of class specific arctic operational guidelines, and the testing of ice-capable submarine support structures. This program also provides the framework for various R&D programs to conduct test and evaluation in shallow water and arctic regions.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	12.520	5.590	5.697	-	5.697
Current President's Budget	10.869	5.590	9.253	-	9.253
Total Adjustments	-1.651	-	3.556	-	3.556
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.058	-			
• Program Adjustments	-	-	3.566	-	3.566
• Rate/Misc Adjustments	-	-	-0.010	-	-0.010
• Congressional General Reductions Adjustments	0.007	-	-	-	-
• Congressional Add Adjustments	-1.600	-	-	-	-

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

**Project: 9999: Congressional Adds**

Congressional Add: *Submarine Panoramic Awareness System Program*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	0.797	-
	0.797	-
	0.797	-

**Change Summary Explanation**

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0770: <i>Adv Sub Supp Equip Prog</i>	4.356	-	3.910	-	3.910	4.030	4.077	4.169	4.253	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

A continuing need exists to improve Imaging and Electronic Warfare Support (ES) capabilities in view of the advancements in potential imaging counter detection, the increasingly dense electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ES and imaging to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection, and Joint Strike. The program is divided into two project categories: Advanced Imaging Project Development and Advanced Electronic Warfare Support Project Development. Both of these categories will allow for the evaluation of the vulnerability of submarine masts, periscopes, and sensors to visual, radar, and infrared detection and evaluation of state of the art technology to implement periscope/mast engineering improvements to reduce counter detection threats, the pursuit of technologies (such as PATRIOT LPI radar range finding and 360 degree imaging systems) to develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies available from academia and other sources. Engineering Demonstration Models (EDMs) are developed, evaluated, and validated in the lab and through at-sea testing.

The Advanced Imaging Project Development projects include the development of: 360 Degree Imaging - Far Term Advanced System, 360 Degree Imaging - Near Term System, 360 Degree Submarine Panoramic Infra-Red (SPIR) Imaging System, Advanced Head Window Water Shedding, Electro-Optic/Infrared Vulnerability Reduction, and a Low Cost, Multi-Spectral, Grade A Head Window and Mast Signature Reduction. The Advanced Electronic Warfare Support (ES) Development projects include the development of: PATRIOT Phase B - Low Probability of Intercept (LPI) Radar, Distant ES Support and Remote Log-In, Rapid Reprogram Threat Library, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool.

All programs funded in this project are non-acquisition category programs. The test articles identified consist of critical components that will be fully developed during engineering development into Engineering Development Models (EDMs).

ASSEP Program was transferred from a Military Intelligence Program, Program Element (PE) 0303562N in Fiscal Year 2012 back to PE 0603562N.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Advanced Imaging Project Development	2.584	-	2.704
<b>Articles:</b>	0		0
<b>FY 2010 Accomplishments:</b>			
Continuing 360 Degree Imaging (JPL) - Far Term Advanced System			
Continuing 360 Degree Submarine Panoramic Mid-Wave Infra-Red (MWIR) Imaging System			
Continuing Advanced Head Window Water Shedding			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continuing Low Cost, Multi-Spectral Grade A Head Window Continuing Mast Signature Reduction  <b>FY 2012 Plans:</b> 360 Degree Imaging (JPL) - Far Term Advanced System: Spiral 1 Testing 360 Degree Submarine Panoramic Mid-wave Infra-Red (MWIR) Pier Side Testing Phase 1 360 Degree Imaging (ONR) - AMPP - (Demo TRL 4/5 HDTV NIR Electro-Optic/Infrared Vulnerability Signature Reduction (Update TDA) Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU) Capability Insertions (CI) - (Transition to EW - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid) Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU)			
<b>Title:</b> Advanced Electronic Warfare Support (ES) Project Development  <b>FY 2010 Accomplishments:</b> Transferred to ES PATRIOT Phase B - Low Probability of Intercept (LPI) Radar Capability Insertions (CI) Continuing Distant ES Support and Remote Log-In Continuing Rapid Reprogram Threat Library Continuing ES Vulnerability Tool  <b>FY 2012 Plans:</b> Distant ES Support Remote Log-In: At-Sea Test and Transition to EW ES Vulnerability Tool: Lab Demonstration Rapid Reprogram Threat Library: At-Sea Test and Transition to EW	<b>Articles:</b> 1.772 0	-	1.206 0
<b>Accomplishments/Planned Programs Subtotals</b>	4.356	-	3.910

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

N/A

**D. Acquisition Strategy**

This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letters, Serial N77/3U629212, dated 04 Sep 03, CNO Ltr Ser N772/5U936037 dtd 13 JUN 2005, CNO Ltr Ser N776/4U786103 dtd 1 APR 2004, COMSUBLANT/ COMSUBPAC, Virginia Class SSN Operational Requirements Documentation objectives, ORD for Photonics (ORD #365-87-94) [dtd JUL 1994], Operational Requirements Document (ORD) for ES (ORD # 570-77-00) [dtd 20 DEC 2000], ORD for ISIS (ORD #663-77-05) [dtd MAR 2005]. Project



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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	0770: <i>Adv Sub Supp Equip Prog</i>

efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available from and other sources. Engineering Demonstration Models (EDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.

**E. Performance Metrics**

The RDD program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	SS/CPIF	NASA JPL:CA	7.735	-		1.344	Dec 2011	-		1.344	0.000	9.079	
Systems Engineering	WR	NUWC:RI	5.014	-		2.290	Dec 2011	-		2.290	0.000	7.304	
Primary Hardware Development	SS/CPIF	NRL:Not Specified	1.777	-		-		-		-	0.000	1.777	
Primary Hardware Development	SS/CPIF	NAWC:CA	5.769	-		-		-		-	0.000	5.769	
<b>Subtotal</b>			20.295	-		3.634		-		3.634	0.000	23.929	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Technical Services	C/CPAF	AT&T GSI:Vienna, VA	1.115	-		0.240	Feb 2012	-		0.240	0.000	1.355	
<b>Subtotal</b>			1.115	-		0.240		-		0.240	0.000	1.355	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	WR	NAVSEA:WNY	0.148	-		0.036	Oct 2011	-		0.036	0.000	0.184	
<b>Subtotal</b>			0.148	-		0.036		-		0.036	0.000	0.184	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			21.558	-		3.910		-		3.910	0.000	25.468	

**Remarks**

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0770</b>				
360 Degree Imaging (ONR) - MWIR - (Concept Study)	1	2010	1	2010
360 Degree Imaging (ONR) - MWIR - (Pierside Testing Phase 1)	1	2012	1	2012
360 Degree Imaging (ONR) - MWIR - (Lab Demo Phase 2)	3	2014	3	2014
360 Degree Imaging (JPL) High Resolution (Spiral 1 S/W Demo)	3	2010	3	2010
360 Degree Imaging (JPL) High Resolution (Spiral 2 S/W CDR)	2	2013	2	2013
360 Degree Imaging (JPL) High Resolution (Spiral 2 Lab Demo)	3	2014	3	2014
360 Degree Imaging (JPL) High Resolution (Spiral 2 Pierside Testing)	1	2015	1	2015
360 Degree Imaging (JPL) High Resolution (Spiral 3 Study)	2	2015	2	2015
360 Degree Imaging (JPL) High Resolution (Spiral 3 CDR)	3	2016	3	2016
360 Degree Imaging (ONR) - AMPP - (Demo TRL 4/5 HDTV NIR)	3	2012	3	2012
360 Degree Imaging (ONR) - AMPP - (Demo TRL 6/7 HDTV NIR)	3	2013	3	2013
360 Degree Imaging (ONR) - AMPP - (Demo TRL 7/8 HDTV NIR)	3	2014	3	2014
360 Degree Imaging (ONR) - AMPP - (Lab Demo Complete Periscope)	3	2015	3	2015
360 Degree Imaging (ONR) - AMPP - (Pierside Testing)	3	2016	3	2016
Head Window Water Shedding (At-Sea Testing)	1	2010	1	2010
Low Cost, Multi-Spectral, Grade A, Head Window - (Lab Testing)	1	2010	1	2010
Electro-Optic/Infrared Vulnerability Signature Reduction (V&V Hardbody/Wake Models/ Studies)	1	2010	1	2010
Electro-Optic/Infrared Vulnerability Signature Reduction (Update TDA)	2	2012	2	2012
Electro-Optic/Infrared Vulnerability Signature Reduction (Update GUI)	4	2012	4	2012
Electro-Optic/Infrared Vulnerability Signature Reduction (At-Sea Test)	4	2013	4	2013
Electro-Optic/Infrared Vulnerability Signature Reduction (Transition to Imaging)	3	2014	3	2014

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
PATRIOT B (EDM)	1	2010	1	2010
PATRIOT (Transition to EW)	2	2010	2	2010
Capability Insertions (CI) - (Develop - 1 Remote Log-in/Operation)	1	2010	1	2010
Capability Insertions (CI) - (Develop - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid)	2	2010	2	2010
Capability Insertions (CI) - (Transition to EW - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid)	2	2012	2	2012
Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU)	3	2012	3	2012
Capability Insertions (CI) - (At-Sea Test - 4 Integrated ES/ECS RFDU)	1	2014	1	2014
Capability Insertions (CI) - (Transition to EW - 4 Integrated ES/ECS RFDU)	4	2014	4	2014
Capability Insertions (CI) - (Develop - 5 Specific Emitter Identification)	2	2014	2	2014
Capability Insertions (CI) - (At-Sea Test - 5 Specific Emitter Identification)	1	2016	1	2016
Capability Insertions (CI) - (Develop - 6 MMM Payload)	2	2015	2	2015
Capability Insertions (CI) - (Develop - 7 LPI DF )	2	2016	2	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1739: <i>Submarine Arctic W/F Development</i>	5.716	5.590	5.343	-	5.343	5.414	5.541	5.663	5.765	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Submarine Arctic Warfare Development project responds to the increased threat of submarine and surface ship activity in arctic regions of the world through the development of advanced submarine concepts. It places particular emphasis on submarine operability and mission support in unique, cold, ice-covered, environments. Efforts include assessment of combat system effectiveness, weapons testing, use of high frequency sonars in arctic regions, testing of ice-capable submarine structures, and development of class-specific arctic operational guidelines. This project also provides the framework for various research and development programs to conduct test and evaluation in shallow water and arctic regions.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Conduct ICEX and Arctic Transit Mission, ICEX Workup and Training, Ice Camp	5.716	5.590	5.343
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Conducted Ice Exercises (ICEX) mission, Arctic transit mission, ICEX workup and ICEX training. Supported Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders. Investigated, researched, developed and deployed new systems for Arctic submarine support. Supported testing and tactical development required to improve submarine Arctic operability and warfighting.			
<b>FY 2011 Plans:</b> Conduct ICEX missions, Arctic transit missions, ICEX workups, ICEX training, and Ice Camp. Provide planning and logistics, and support Ice Camp operations and Scientific Ice Exercises (SCICEX) accommodations. Support Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic operability and warfighting. Coordinate and provide technical and logistical support for the Ice Camp in the Arctic Ocean.			
<b>FY 2012 Plans:</b> Provide planning and support for upcoming ICEX missions, Ice Camp operations and SCICEX accommodations. Support Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic operability and warfighting.			
<b>Accomplishments/Planned Programs Subtotals</b>	5.716	5.590	5.343

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>

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

N/A

**D. Acquisition Strategy**

Use sole source and competitively awarded contracts through the Fleet Industrial Supply Center (FISC) regional contracting office for equipment and technical services. NAVSEA University Affiliated Research Center (UARC) omnibus contract will be used for procurement of logistics support for Ice Camps.

**E. Performance Metrics**

- Complete ICEX workup in preparation for the ICEX (at-sea) mission.
- Participate in SCICEX accommodation planning for Arctic Ice Camp.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	COMSUBPAC:CA	18.447	4.250	Oct 2010	4.039	Oct 2011	-		4.039	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	UW/APL:WA	5.628	1.200	Jan 2011	1.200	Dec 2011	-		1.200	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NUWC/Newport:RI	0.235	-		-		-		-	0.000	0.235	0.235
<b>Subtotal</b>			24.310	5.450		5.239		-		5.239			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/CPAF	EG&G:VA	0.311	-		-		-		-	0.000	0.311	0.311
Program Management Support	C/CPAF	BAE SYSTEMS:MD	0.644	0.140	Feb 2011	0.104	Dec 2011	-		0.104	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA PEO IWS 5:Washington, DC	0.040	-		-		-		-	0.000	0.040	Continuing
<b>Subtotal</b>			0.995	0.140		0.104		-		0.104			

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		25.305	5.590		5.343		-	5.343			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
	<b>Arctic Deployment (at Sea)</b> A Submarine Deployment as required by the submarine Type Commander																											
<b>ICEX Mission (at Sea)</b> A Submarine Ice Exercise operation to improve the Navy's understanding of the Arctic.																												
<b>Arctic Transit Mission (at Sea)</b> An operation in support of the Navy's need to "surge" a submarine from the Atlantic to the Pacific (or vice versa) via the Arctic.																												
<b>Arctic Workup (at Sea)</b> A short underway period conducted in the submarine's local operating areas prior to embarking on an Arctic, mission, deployment, or ICEX.																												
<b>Arctic Training</b> Provides classroom training to the ship's watchstanders by the Ice pilot(s) to practice under-ice shiphandling.																												
<b>ICE Camp (Arctic Ocean)</b> A remote field station set up in the Arctic to conduct submarine operational and tactical testing.																												
<b>SCICEX Accommodation (at Sea)</b> Support scientific understanding of the Arctic Ocean.																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 1739</i></b>				
ICEX Mission (at Sea)	1	2010	4	2016
Arctic Transit Mission (at Sea)	1	2010	4	2016
ICEX Workup (at Sea)	1	2010	4	2016
ICEX Training	1	2010	4	2016
ICE Camp (Arctic Ocean)	1	2011	4	2016
SCICEX Accommodation	1	2011	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

A continuing need exists to improve submarine capabilities to improve safety of ship, survivability, and operational effectiveness in the increasingly dense littoral environment encountered by submarines prosecuting special missions in the Global War on Terrorism (GWOT). Improvements are necessary for operational effectiveness in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection, and Joint Strike. The ASSEP program is currently investigating means to improve effectiveness in these areas and is pursuing the development of a 360 degree imaging system. In order to maximize the availability of this type of system to the fleet as well as providing an increased number of available, enhanced capability systems for consideration and future competitive procurement, additional investigation into the development of an initial capability Engineering Development Model (EDM) as well as the investigation into alternate enhanced capability technologies for long term solutions is required. In addition to this requirement, there is a need to extend the Intelligence, Surveillance, Reconnaissance, and Targeting (ISRT) reach of the submarine conducting these missions to points over the horizon. In order to achieve this end the ASSEP program is investigating potential means of providing a stealthy launch of Unmanned Aerial Systems (UAS) to conduct these needed ISRT tasks.

All programs funded in this project are non-acquisition category programs. Program plans and priorities are established by N87. The test articles identified consist of critical components that will be fully developed during engineering development into EDMs.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Submarine Panoramic Awareness System Program	0.797	-
<b>FY 2010 Accomplishments:</b> N/A		
<b>Congressional Adds Subtotals</b>	0.797	-

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

N/A

**D. Acquisition Strategy**

This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letters, Serial N77/3U629212, dated 04 Sep 03, Serial N77/3U629205, dated 01 Apr 03, and Serial N77/1U651534, dated 30 Oct 01, COMSUBLANT/COMSUBPAC Command Capability Issues (CCIs), Virginia Class SSN Operational Requirements Document objectives, a review, assessment and prioritization of Sensor and Processor efforts and SSN force level projections for SSN688/688I, SSN21, and SSN 774 classes through FY15. Project efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	9999: <i>Congressional Adds</i>

from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility Demonstration Models (FDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.

**E. Performance Metrics**

Congressional Adds

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	23.166	17.883	14.308	-	14.308	14.114	11.552	5.585	5.843	Continuing	Continuing
2196: <i>Design, Tools, Plans and Concepts</i>	0.566	0.621	0.529	-	0.529	0.542	0.554	0.494	0.506	Continuing	Continuing
3161: <i>NAVSEA Tech Authority</i>	22.600	17.262	13.779	-	13.779	13.572	10.998	5.091	5.337	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Explore alternative surface ship force structures, advanced surface ship and unmanned surface vehicles concepts, and the potential technologies for these force structures and advanced concepts in support of pre-acquisition mission needs analysis, mission area analysis, and planning. The objective is a more affordable, mission capable surface ship force including ships with reduced manning, increased ability to produce, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the shipbuilding plan.

Project 2196 - This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria.

Project 3161 - This project funds a prioritized portfolio of time-sensitive initiatives supporting NAVSEA Technical Authority through integrated efforts in Cross Platform Systems Development (CPSD), furthering Sea Enterprise through the development of support elements for Technical Warrant Holders and meeting relevant needs of the warfare community. The areas of exploration for CPSD include surface ship concept advanced development, submarine concepts, next generation unmanned surface vehicle, high speed ships/craft, tool integration and technical data exchange, embedded interoperability engineering, and mission capability system engineering. The research products developed by this project directly influence future acquisition programs by providing a range of technically acceptable alternatives and evaluation of emerging technologies.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	22.387	17.883	17.254	-	17.254
Current President's Budget	23.166	17.883	14.308	-	14.308
Total Adjustments	0.779	-	-2.946	-	-2.946
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	1.416	-			
• SBIR/STTR Transfer	-0.218	-			
• Program Adjustments	-	-	-2.318	-	-2.318
• Section 219 Reprogramming	-0.396	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.628	-	-0.628
• Congressional General Reductions Adjustments	-0.023	-	-	-	-

**Change Summary Explanation**

FY12 Program decrease reflects overhead and contract services adjustments.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>				<b>PROJECT</b> 2196: <i>Design, Tools, Plans and Concepts</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2196: <i>Design, Tools, Plans and Concepts</i>	0.566	0.621	0.529	-	0.529	0.542	0.554	0.494	0.506	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project develops and explores alternative surface ship force structures, advanced surface ship and unmanned surface vehicles concepts, and the potential technologies for these force structures, along with advanced concepts in support of pre-acquisition mission needs analysis, mission area analysis, and planning. The objective is a more affordable, mission capable surface ship force including ships with reduced manning, increased ability to produce, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, surface ship mission effectiveness studies, and advanced design concept studies for the ships that may become part of the shipbuilding plan.

(U) This project provides the foundation for an affordable and mission capable surface ship force. It also supports the next step in the development of a transformed naval force by accomplishing the pre-milestone A (especially pre-concept decision) efforts for all potential surface ships and craft. These efforts are the required first step in the integration of total ship systems, including combat systems, weapons systems and Hull, Mechanical and Electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design, construction and operational problems. A more subtle and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and our greatest potential ship design advances never realized. Designs and technologies must meet the threat. This project supports this requirement.

(U) This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.

(U) This project accomplishes the following: (1) Develops alternative surface ship force structure concepts including the ships and unmanned vehicles; (2) Evaluates the mission capability effectiveness and costs for these alternative surface fleet architectures; (3) Performs fleet war fighting/mission effectiveness assessment studies; (4) Identifies future surface ship requirements and characteristics necessary to meet future threats and support mission needs; (5) Investigates new affordable ship concepts and evaluates technologies necessary to support these concepts; (6) Provides design methods and automated design tools to develop and evaluate ship concepts; and (7) Supports development of Initial Capabilities Documents (ICD) and analogous early requirements documents for future ships. These efforts are done to support mission analysis; mission needs development and technology assessment in support of future fleet concepts and potential ship acquisition programs. These efforts are fundamental to the Navy's formulation of the future fleet.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 2196: <i>Design, Tools, Plans and Concepts</i>
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(U) Supports concept exploration and mission needs assessment for potential future ship acquisition programs, however, these are not direct efforts for specific, authorized shipbuilding programs. This project is the only R&D effort (Government or commercial) that supports and maintains this country's naval ship design and engineering capabilities in the area of very early stage (Concept Design) design tools, criteria, and methods.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Ship Concepts and Mission Need Analysis</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> (U) Develop ship concepts and perform analysis for potential ships and Force Architecture 5-10 years out in shipbuilding plan.</p> <p><b>FY 2010 Accomplishments:</b> Designed concepts for Maritime Presence Gap Analyses.</p> <p><b>FY 2011 Plans:</b> Concept designs for small and medium surface combatants with a broad mix of gun, missile, and other emerging weapon topics (high energy, etc.)</p> <p><b>FY 2012 Plans:</b> Continuation of concept designs for small and medium surface combatants with a broad mix of gun, missile, and other emerging weapon topics (high energy, etc), also to include energy- and cost-reducing technologies and concepts as related to ship systems.</p>	0.403 0	0.534 0	0.456 0
<p><b>Title:</b> Total Ship Technology Assessment (TSTA)</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> (U) Analyze the benefits and impacts of new ship, Hull, Mechanical &amp; Electrical (HM&amp;E) concepts, technologies and warfare systems.</p> <p><b>FY 2010 Accomplishments:</b> Focus directed towards ship impacts of enhancing Anti-Ship Cruise Missiles (ASCM) defense systems, such as the installation of directed energy weapons, increasing the lethality of an installed direct fire railgun, and the integration of soft kill weapon systems. Expanded Total Ship Technology Assessment (TSTA) to ongoing surface combatant concept and Auxiliary Tug Fleet Salvage Ship (ATFSS) Design Team.</p> <p><b>FY 2011 Plans:</b> Expand TSTA methodology to Advanced Ship Warfare (ASW), Advanced Ship Undersea Warfare (ASUW) products developed under FY10 Concepts and Mission Needs Analysis.</p> <p><b>FY 2012 Plans:</b></p>	0.084 0	0.087 0	0.073 0



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 2196: <i>Design, Tools, Plans and Concepts</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continuation of expanded TSTA methodology with ASW, ASUW products developed under FY11 Concepts and Mission Needs Analysis, also to include energy and cost-reducing technologies and concepts as related to ship systems.			
<p><b>Title:</b> Ship Concept Design and Engineering Tools, Methods, and Criteria</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> (U) Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies.</p> <p><b>FY 2010 Accomplishments:</b> Completed testing of Advanced Ship Synthesis Evaluation Tool (ASSET) for ongoing and emerging ship concepts; including new hull forms and technologies, emerging combat system concepts.</p>	0.037 0	-	-
<p><b>Title:</b> Mission Systems Interface Development and Demonstration</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> (U) Requirements development to counter asymmetric, peer and littoral enemies with tailored, modularized mission systems.</p> <p><b>FY 2010 Accomplishments:</b> Completed Open-ocean ASW technology insertion analysis.</p>	0.042 0	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	0.566	0.621	0.529

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

<u>Line Item</u>	FY 2010	FY 2011	FY 2012 <u>Base</u>	FY 2012 <u>OCO</u>	FY 2012 <u>Total</u>	FY 2013	FY 2014	FY 2015	FY 2016	Cost To <u>Complete</u>	Total Cost
• RDTEN/0204202N: <i>DDG-1000</i>	507.742	549.241	261.604	0.000	261.604	340.009	168.344	164.089	100.335	0.000	2,091.364
• RDTEN/0603512N: <i>Carrier Systems Development</i>	171.441	93.830	54.072	0.000	54.072	47.867	46.291	47.837	48.723	0.000	510.061
• RDTEN/0603513N: <i>Shipboard Systems Component Development</i>	32.008	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.059
• RDTEN/0603564N: <i>Ship Preliminary Design/Feasibility</i>	30.928	1.796	22.213	0.000	22.213	26.522	35.965	35.660	19.399	0.000	172.483
• RDTEN/0604567N: <i>Ship Contract Design/Live Fire T&amp;E</i>	91.771	153.686	161.099	0.000	161.099	190.301	138.186	104.039	93.153	0.000	932.235
	20.822	24.344	34.157	0.000	34.157	33.517	33.135	29.961	30.809	0.000	206.745

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 2196: <i>Design, Tools, Plans and Concepts</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTEN/0603582N: <i>Combat System Integration</i>											

**D. Acquisition Strategy**

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments.

**E. Performance Metrics**

None

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3161: <i>NAVSEA Tech Authority</i>	22.600	17.262	13.779	-	13.779	13.572	10.998	5.091	5.337	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project has been established to support NAVSEA Technical Authority through coordinated, collaborative, cross-platform systems development resulting in advanced capabilities across business lines through development adaptation and extension of processes, procedures, and tools necessary to develop and explore alternative surface ship and submarine force structures; advanced submarine, surface ship & unmanned surface vehicle concepts; interoperability; and development of systems level engineering criteria and options to support these force structures and advanced concepts as part of pre-acquisition mission needs analysis, mission area analysis, SCN, and R&D planning. The objective is the coordination of ongoing early-stage concept design and development efforts for cross-platform applicability to result in a more affordable, mission-capable, and interoperable surface ship and submarine forces including ships and submarines with reduced manning, increased ability to produce, reduced operating and support costs, and greater utilization of the latest technology.

NAVSEA Tech Authority efforts under Project 3161, known as the Cross Platform Systems Development (CPSD) Program enhance ongoing efforts within Project 2196 and transition directly to early-stage ship design for Ship and Submarine Preliminary Design and Feasibility Studies and other Program Executive Office (PEO) ship and submarine design programs. While these efforts support concept exploration and mission needs assessment for potential future ship and submarine acquisition programs, they are not direct efforts for specific, authorized shipbuilding programs. This project is the only R&D effort (Government or commercial) that provides a coordinated, collaborative approach to the development of cross-platform naval ship, submarine, and weapon system design and engineering capabilities in the areas of design tools, criteria, and methods. This project also provides innovative solutions for current Fleet issues involving Technical Authority, such as current interoperability issues with new systems or platforms.

Naval Ship System Engineering Tech Authority recapitalization and product development consolidates platform advanced concept development and design tool development in CPSD 1.0 (Platform Concept Advanced Development) and CPSD 2.0 (Platform Design and Certification Tools/Engineering and Tech Data Exchange Development); and aligned standards and requirements development for modularity and system / component commonality within CPSD 3.0 (Ship Systems Engineering/Modular Ship Systems Development). Program product areas support: platform-centric force architecture and concept development and tools (CPSD 1.0, CPSD 2.0), engineering products and system development (CPSD 3.0, CPSD 5.0), and system interoperability and mission capability for delivering ships and submarines (CPSDs 6.0, 8.0, 9.0). CPSD develops and transitions products to Technical Warrant Holder (TWH) community and develop prioritized plans and activities for future products from emerging cross platform technical requirements and associated capabilities.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Platform Concept Advanced Development (CPSD 1.0)	1.964	2.190	1.544
<b>Articles:</b>	0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>		<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p><b>Description:</b> (U) This effort directly supports the Navy's ability to understand risk and associated cost of surface and submarine warfare assets; Pre-Milestone A ship, craft, and unmanned surface vehicle (USV) design and analysis.</p> <p><b>FY 2010 Accomplishments:</b> Future Expeditionary Warfare Concept Study and capability assessment; Developed future surface combatant concept options incorporating emerging combat system, propulsor/propulsion, powering, and modular architectures; Developed future auxiliary concepts including replenishment and fleet support; Integrated future submarine concepts and force architecture options; Developed green/brown water support and presence concepts; Examined common cross platform architectures, interfaces, and modular approaches to leverage common mission capability and achieve ability to produce efficiencies; Developed High Speed Open Ocean concepts leveraging results of ongoing technology development; Competed for New Work Area Projects. Supported development of DDG III Flight upgrade study trade studies and ship concept design. Supported requirements development including the Capability Development Document (CDD).</p> <p><b>FY 2011 Plans:</b> Expand Capability assessment begun in FY10 to other warfare areas; Continue operational assessment of Long Range Endurance prototype and Autonomous Health Monitoring and Recovery prototype; Continue development of USV interoperability concepts and architectures including technical architectures for USV operations aboard manned and unmanned surface combatants; Continue platform design processes and Standards in development support of next generation submarine concept exploration; Continue development of cross-platform, common modular payload and interface concepts. Continue supporting DDG III Flight upgrade study trade studies, ship concept design, and requirements development.</p> <p><b>FY 2012 Plans:</b> Continue the integration of modular-open systems architectures into warship design and acquisition, (b) continue to research the power requirements of Unmanned Surface Vehicle (USV) payloads, investigating power conversion equipment monitoring and controls systems and additional USV system monitoring and control systems, and (c) continue Comparative Naval Architecture (CAN) effort evaluating different individual ships from various navies (some co-operative, some hostile).</p>				
<p><b>Title:</b> Platform Design and Certification Tools/Engineering and Tech Data Exchange (CPSD 2.0)</p> <p align="right"><b>Articles:</b></p>				2.136
				0
				3.657
				0
				3.514
				0
<p><b>Description:</b> (U) This effort supports the development and validation tools to certify the safety and mission capability of platform concepts and subsequently ships and submarines; establishes the integrated NAVSEA tool suite to support execution of NAVSEA Tech Authority.</p> <p><b>FY 2010 Accomplishments:</b></p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>		<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p>Continued integration of analytical tools supporting high performance naval ship technologies; Continued assessment of data exchange standards between Live Fire Test &amp; Evaluation Modeling &amp; Simulation (LFT&amp;E M&amp;S) and shipbuilder CAD environments; began certification process; Continued expansion of M&amp;S integrated environment to additional engineering disciplines; Coordinated data development and data exchange requirements to minimize data regeneration and modification efforts between disciplines and support reuse through design and acquisition process.</p> <p><b>FY 2011 Plans:</b> Continue Technical Warrant Holder Concept Validation Support; continue Concept Design Tool Development - implementation and validation; Continue integration of analytical tools supporting high performance naval ship technologies; Continue assessment of data exchange standards between LFT&amp;E M&amp;S and shipbuilder CAD environments; Continue expansion of M&amp;S integrated environment to additional engineering disciplines. Coordinate data development and data exchange requirements to minimize data regeneration and modification efforts between disciplines and support reuse through design and acquisition process.</p> <p><b>FY 2012 Plans:</b> Continue the ASSET synthesis program development to modularize its architecture to accommodate insertion of new modules and updating existing needed for advanced ship concepts and emerging ship technology. Continue concept design tool development - implementation and validation; begin certification process.</p>				
<p><b>Title:</b> Ship Systems Engineering /Modular Ship Systems Development (CPSD 3.0)</p> <p align="right"><b>Articles:</b></p>				2.056
				0
				3.062
				0
				2.658
				0
<p><b>Description:</b> (U) This effort supports Ship system development with a focus on technology transition, modularity, ship system technology integration, and design standards for new ship classes for pre-Alternative of Analysis (AoA) studies and ongoing POR ship and submarine development.</p> <p><b>FY 2010 Accomplishments:</b> Expanded Full Ship Finite Element Modeling Baseline and expand resolution into survivability, vulnerability and recoverability analyses; Incorporated integrated topside design tool set and methodologies; Expanded Cost Analysis modeling and simulation via improved cost estimating relationships that included concepts of equipment density and fabrication complexity; Articulated developing combat system architectures in terms of ship system impacts and cost; Included emerging power and propulsion system architectures into Modeling Baseline. Supported development of DDG III Flight upgrade study trade studies and ship concept design. Supported requirements development including the Capability Development Document (CDD).</p> <p><b>FY 2011 Plans:</b> Continue Cost Analysis modeling and simulation via improved cost estimating relationships that include concepts of fabrication complexity; continue survivability, recoverability and vulnerability analyses; Continue developing hydrodynamic safe operating</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>envelope analysis methods and design processes; articulate development of combat system architectures in terms of ship system impacts and cost; Include emerging power, propulsion and auxiliary system architectures and technologies into Modeling Baselines; incorporate integrated power and combat system architectures; Develop open and modular system technical architectures for various platforms development transition of open architecture standards and tools to NAVSEA community. Continue supporting DDG III Flight upgrade study trade studies, ship concept design, and requirements development.</p> <p><b>FY 2012 Plans:</b> Continue SEAQUEST development, enabling the combination of multiple cross-disciplinary models and applications together in a simulation process flow, automate execution across distributed computer resources, explore the resulting design space, and identifies the optimal design parameters subject to required constraints, (b)support implementation and transition of the commonality approach based on Navy and private sector best practices for the implementation of commonality initiatives, (c)develop a long term strategic roadmap that incorporates the varied technology gaps and ongoing initiatives within the surface ship structural discipline.</p>				
<p><b>Title:</b> Next Generation USV (CPSD 4.0)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> (U) Development and demonstration of Unmanned Surface Vehicle (USVs) with focus on autonomous behavior, modularity, new ship classes for pre Alternative of Analysis (AoA) studies.</p> <p><b>FY 2010 Accomplishments:</b> Conducted operational assessment of Long Range Endurance prototype and Autonomous Health Monitoring and Recovery prototype; Continued development of USV interoperability concepts and architectures; developed open architecture &amp; modular system and technical architectures for USV operations aboard manned and unmanned surface combatants; Competed for New Risk Area Projects.</p>		1.371 0	-	-
<p><b>Title:</b> High Speed Ships and Craft Engineering (CPSD 5.0)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> (U) This effort supports the development of concepts for future high speed ships and craft that promise improved mission effectiveness in mobility, survivability, and warfare mission areas.</p> <p><b>FY 2010 Accomplishments:</b> Weapon Effects testing of Aluminum Structures (MOA - FIN-GER USA) tri lateral testing of Ship 2 of Helsinki Class Fast Missile Craft; High Speed Ships tools, guidelines, validated data sets and training: High speed human systems (trials, testing, numeric</p>		2.486 0	1.770 0	1.337 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
modeling, guidelines for early stage design); Light Weight Structures cooperative research with NATO partners; Light Weight Structures Shock (Helsinki Class) Shock Trial.  <b>FY 2011 Plans:</b> Reliability Based Structural Design of Aluminum Ships - Helsinki Class Life Time Loads and Fatigue analyses; Composite propulsor construction and testing; Trials, testing, numeric modeling, guidelines supporting for early stage design of High Speed Ships and Craft.  <b>FY 2012 Plans:</b> Continues the development of an advanced hydrodynamic simulation tool that has adequate fidelity for all environmental conditions required to define a Safe Operating Envelope. The effort addresses this need for an analytic approach, which will be verified and validated through correlation with data obtained from analytic tests, sub-scale trials, and ultimately full scale trails.				
<b>Title:</b> Alternative Power Systems Engineering (CPSD 6.0)  <b>Description:</b> (U) This effort investigates concepts for ships and craft with alternative power/propulsion systems evaluating effectiveness in mobility, survivability, and warfare mission areas.  <b>FY 2010 Accomplishments:</b> Alternate propulsion tools, guidelines, validated data sets and training; Extreme wave modeling cooperative research project with NATO partners; Hydrodynamics force and moment modeling supporting dynamic stability simulation; Next Generation Integrated Propulsion systems architecting, survivability and propulsor.  <b>FY 2011 Plans:</b> Commercial Pod Foreign Comparative Testing numeric simulations, purpose built podded propulsion design to vulnerability; next generation Integrated prop systems engineering; Shaft and strut hydro numeric modeling of lateral plane force and moment effects on ship stability.  <b>FY 2012 Plans:</b> Continue investigation of alternative power/propulsion systems evaluating effectiveness in mobility, survivability and warfare mission areas. Begin targeted implementation of weapon systems roadmap. Support modeling of propulsor out of plane force and moment modeling needed for Safe Operating Envelope ship dynamics simulations. This work area supports hydrodynamic capabilities from design through certification.		2.328 <b>Articles:</b> 0	1.627 0	1.254 0
<b>Title:</b> Future Submarine Design (CPSD 7.0)		3.044 <b>Articles:</b> 0	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>		<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<b>Description:</b> (U) This effort supports development of ship concept studies and evaluates technologies to define the Next Generation Submarine, common SSN-SSBN Hull and Payload Modularity.				
<b>FY 2010 Accomplishments:</b> Navy After Next Tech Validated; Technical Warrant Holder Concept Validation Support; ASSET Submarine Concept Design Tool Dev - integration and testing phase; Submarine Design Processes and Standards Development; next generation submarine concept explored; modular payload and interface concept developed.				
<b>Title:</b> Embedded Interoperability (I/O) Engineering (CPSD 8.0)				
				<b>Articles:</b>
				3.186
				2.407
				1.667
				0
				0
				0
<b>Description:</b> (U) This effort establishes and executes a dedicated process for evaluating the interoperability performance of warfare systems early in the acquisition cycle, prior to certification. Embedded I/O ensures that fewer mission critical system failures degrade the ultimately fielded war fighting capability. Focus on emerging Open Architecture warfare systems, including LCS 1 & 2.				
<b>FY 2010 Accomplishments:</b> Completed development of Tactics, Techniques and Procedures (TTP) for CVN 77 and DDG Modernization; continued pre-certification for the interoperability test and assessment of LCS, DDG 1000 and CVN 21 (CVN 78); Continued interoperability efforts LPD 17 (class); Completed TTP for LCS 1 & 2.				
<b>FY 2011 Plans:</b> Continue interoperability test and assessment of DDG 1000 and CVN 21 (CVN 78); Complete interoperability efforts LPD 17 (class).				
<b>FY 2012 Plans:</b> DDG 51 Upgrade (ACB 12) - Review of system design related to interoperability will continue to occur in FY12. Developmental test and assessment activity planned for FY12 and the final cert planned for early FY14. CG Mod (ACB 12)- Review of system design related to interoperability will continue to occur in FY12. Developmental test and assessment activity planned for FY12 and the final cert planned for early FY14. DDG 1000 - Review of system design related to interoperability will continue to occur in FY12. Developmental test and assessment activities are scheduled for FY 14-18. CVN 78 - Review of system design related to interoperability will continue to occur in FY12. Developmental test and assessment activities are scheduled for FY 14-18. Focus on emerging Open Architecture warfare systems, including LCS 1 & 2.				
<b>Title:</b> Mission Capability Systems Engineering (CPSD 9.0)				
				<b>Articles:</b>
				3.102
				2.549
				1.805
				0
				0
				0



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Description:</b> (U) This effort supports the development of force-level systems engineering criteria and guidance at the Systems of Systems (SoS) and Family of Systems (FoS) level.</p> <p><b>FY 2010 Accomplishments:</b> Continued to provide technical standards, definitions and requirements for National Security Systems (NSS), integrated architecture views for warfare systems of systems, independent technical analysis of warfare systems design and development options and the development of technical artifacts and associated products required by applicable source references by using specially selected Technical Authority Warrant Holders.</p> <p><b>FY 2011 Plans:</b> Continue to provide technical standards, definitions and requirements for National Security Systems (NSS), integrated architecture views for warfare systems of systems, independent technical analysis of warfare systems design and development options and the development of technical artifacts and associated products required by applicable source references by using specially selected Technical Authority Warrant Holders; Expand independent technical analysis of warfare systems design and development options to additional Technical Authority Warrant Holders.</p> <p><b>FY 2012 Plans:</b> Continue to provide technical standards, definitions and requirements for National Security Systems (NSS). Continue Force level systems engineering criteria. Develop and establish the standards and processes required to develop, test, and deploy Open Architecture as well as Automated Software Test and the Tactical Situation (TACSIT) systems to the Fleet.</p>				
<p><b>Title:</b> Ship Engineering &amp; Analysis Technology Center (CPSD 10.0)</p> <p><b>Description:</b> (U) Provides Government activities, shipbuilders, academia and contractors the following:</p> <p><b>FY 2010 Accomplishments:</b> Expanded high performance computing system efforts; leveraging commercial and research software and connectivity; Develop security, visualization and collaborative processes to leverage common centralized data storage; Conduct hydrodynamic analyses of emerging ship and craft concepts in various mission performance and geographic regimes; Conduct airwake analysis of emerging high-speed ship concepts including impact of modular mission and payload architectures and configurations.</p>		<p><b>Articles:</b></p> <p>0.927 0</p>	-	-
<b>Accomplishments/Planned Programs Subtotals</b>		22.600	17.262	13.779

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTEN/0204202N: <i>DDG-1000</i>	507.742	549.241	261.604	0.000	261.604	340.009	168.344	164.089	100.335	0.000	2,091.364
• RDTEN/0603512N: <i>Carrier Systems Development</i>	171.441	93.830	54.072	0.000	54.072	47.867	46.291	47.837	48.723	0.000	510.061
• RDTEN/0603513N: <i>Shipboard Systems Component Development</i>	32.008	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.059
• RDTEN/0603564N: <i>Ship Preliminary Design/Feasibility Studies</i>	30.928	1.796	22.213	0.000	22.213	26.522	35.965	35.660	19.399	0.000	172.483
• RDTEN/0604567N: <i>Ship Contract Design/Live Fire T&amp;E</i>	91.771	153.686	161.099	0.000	161.099	190.301	138.186	104.039	93.153	0.000	932.235
• RDTEN/0603582N: <i>Combat System Integration</i>	20.822	24.344	34.157	0.000	34.157	33.517	33.135	29.961	30.809	0.000	206.745

**D. Acquisition Strategy**

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship and submarine acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments. This program supports the NAVSEA Technical Warrant Holders by providing validated engineering tools, methods, and criteria for ship, submarine and weapon system concept designs and assessments while fostering collaboration and coordination of efforts resulting in more effective use of funding.

**E. Performance Metrics**

Quarterly Program Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering	C/CPFF	Various Contractors:Various	11.665	2.036	Apr 2011	1.532	Apr 2012	-		1.532	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC, NUWC, CDSA:Various	31.141	6.350	Jan 2011	4.952	Jan 2012	-		4.952	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC, NUWC:Various	30.392	6.361	Mar 2011	5.183	Mar 2012	-		5.183	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC:Various	12.873	2.305	Feb 2011	1.928	Feb 2012	-		1.928	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	SPAWAR:Various	1.812	0.110	Mar 2011	0.084	Mar 2012	-		0.084	Continuing	Continuing	Continuing
<b>Subtotal</b>			87.883	17.162		13.679		-		13.679			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Travel	Allot	NAVSEA HQ:Washington, DC	0.400	0.100	Sep 2011	0.100	Sep 2012	-		0.100	Continuing	Continuing	Continuing
DAWDF	Various	Not Specified:Not Specified	0.145	-		-		-		-	0.000	0.145	
<b>Subtotal</b>			0.545	0.100		0.100		-		0.100			

			<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			88.428	17.262		13.779		-		13.779			

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 3161</b>																												
Platform Concept Advanced Development																												
Platform Design and Certification Tools/ Engineering and Tech Data Exchange Development																												
Ship Systems Engineering/Modular Ship Systems Development																												
Next Generation USV																												
High Speed Ships and Craft Engineering																												
Alternative Power Systems Engineering																												
Future Submarine Design																												
Embedded Interoperability Engineering																												
Mission Capability Systems Engineering																												
Ship Engineering & Analysis Technology Center																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603563N: <i>Ship Concept Advanced Design</i>	<b>PROJECT</b> 3161: <i>NAVSEA Tech Authority</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3161</b>				
Platform Concept Advanced Development	1	2010	4	2016
Platform Design and Certification Tools/Engineering and Tech Data Exchange Development	1	2010	4	2016
Ship Systems Engineering/Modular Ship Systems Development	1	2010	4	2016
Next Generation USV	1	2010	4	2010
High Speed Ships and Craft Engineering	1	2010	4	2016
Alternative Power Systems Engineering	1	2010	4	2016
Future Submarine Design	1	2010	4	2010
Embedded Interoperability Engineering	1	2010	4	2016
Mission Capability Systems Engineering	1	2010	4	2016
Ship Engineering & Analysis Technology Center	1	2010	4	2010

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	30.928	1.796	22.213	-	22.213	26.522	35.965	35.660	19.399	Continuing	Continuing
0408: <i>Ship Development (ADV)</i>	5.373	0.437	-	-	-	-	-	-	-	0.000	5.810
0409: <i>DDG-51 Flt III Concept Development</i>	6.925	-	5.707	-	5.707	14.879	15.304	7.962	-	0.000	50.777
2474: <i>LSD Design &amp; Total Ship Integration</i>	-	-	6.588	-	6.588	11.643	20.661	27.698	19.399	Continuing	Continuing
3195: <i>JCC(X)</i>	7.007	-	-	-	-	-	-	-	-	0.000	7.007
3226: <i>Green Water Craft</i>	1.425	1.359	-	-	-	-	-	-	-	0.000	2.784
3261: <i>TAGOS Design &amp; Total Ship Integration</i>	-	-	9.918	-	9.918	-	-	-	-	0.000	9.918
9999: <i>Congressional Adds</i>	10.198	-	-	-	-	-	-	-	-	0.000	10.198

**A. Mission Description and Budget Item Justification**

0408 - SURFTECH - Ship Development project supports the evaluation of advanced and alternative technologies through the Surface Ship Technology (SURFTECH) process for suitability for meeting total ship concepts capability needs.

- OCEAN CLASS AGOR - FY10 Ship Preliminary Design and Feasibility Studies to support procurement of two AGOR ocean Class vessels in FY11 and FY12.
- LCC Class ESA - Assessments of the LCC 19 & 20 will be conducted to determine life extensions under project 0408.

0409 - DDG 51 FLT III Concept Development - Develop Preliminary Analysis, Testing, and Design for introduction of DDG 51 FLT III in FY16.

2474 - LSD(X) is expected to functionally replace LSD 41 class (8 ships) and LSD 49 class (4 ships) for embark, transport, control, insert, sustainment, and extract of Marine Air-Ground Task Force elements and supporting forces by helicopters, landing craft, and amphibious vehicles. New design efforts are required to identify viable alternatives, including examining a reduced cost variant of LPD 17 Class. Funding supports JCIDS, GATE and Milestone processes. LSD(X) was previously budgeted in PE 0604311N.

3195 - JCC(X) was planned as a mobile, self-sustaining platform with robust C4ISR capability for a Joint Force Commander and staff and provides in-theater command and control should a land-based headquarters be unavailable, constrained or threatened.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>
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3226 - Green Water Craft will provide maritime security, stability operations, and increased maritime domain awareness in compliance with Global Maritime Security objectives and in direct support of Global Fleet Stations (GFS). Funding will provide for craft feasibility and sizing study and subsystem mockups in support of initial craft production.

3261 - Preliminary Ship Design and Contract efforts to support procurement of a T-AGOS Class vessel in FY13. T-AGOS ocean surveillance ships have a single mission to gather underwater acoustical data and operate to support the anti-submarine warfare mission.

Congressional Adds:

Support for Naval Ship Hydrodynamic Test Facility, Bow Lifting Body Ship Research and Low Signature Defensive Weapon System for Surface Combatant Craft.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	38.197	1.796	0.285	-	0.285
Current President's Budget	30.928	1.796	22.213	-	22.213
Total Adjustments	-7.269	-	21.928	-	21.928
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-6.995	-			
• SBIR/STTR Transfer	-0.224	-			
• Program Adjustments	-	-	22.194	-	22.194
• Section 219 Reprogramming	-0.040	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.266	-	-0.266
• Congressional General Reductions Adjustments	-0.010	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Low Signature Defensive Weapon System for Surface Combatant Craft*

Congressional Add: *SUPPORT FOR NAVAL SHIP HYDRODYNAMICS TEST FACILITI*

Congressional Add: *Bow Lifting Body Ship Research*

Congressional Add Subtotals for Project: 9999

	<b>FY 2010</b>	<b>FY 2011</b>
	3.824	-
	3.187	-
	3.187	-
	10.198	-



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>
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<b>Congressional Add Details (\$ in Millions, and Includes General Reductions)</b>		<b>FY 2010</b>		<b>FY 2011</b>
Congressional Add Totals for all Projects		10.198		-

**Change Summary Explanation**

DDG-51 Flt III - Reflects approved new start reprogramming request initiating Flight III Concept Study in FY10. FY12 - begins Preliminary Design efforts to reflect Flight III impacts on DDG 51 Class ships, to include superstructure structural modifications, air conditioning plant upgrades, and additional Ship Service Electrical Power increase.

JCC(X) - Decrease in FY10 Reflects LCC(R) program deferrment.

LSD(X) - Begin new design efforts in FY12 that are required to identify viable alternatives, including examining a reduced cost variant of LPD 17 Class.

T-AGOS - Conduct Preliminary ship Design and Contract efforts to support procurement of a T-AGOS Class vessel in FY13.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0408: <i>Ship Development (ADV)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0408: <i>Ship Development (ADV)</i>	5.373	0.437	-	-	-	-	-	-	-	0.000	5.810
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project unit supports three efforts.

**SURFTECH** - The evaluation of advanced and alternative technologies through the Surface Ship Technology (SURFTECH) process for examining suitability for meeting total ship concepts capability needs. The objective of this project is to provide decision makers with feasible, affordable alternatives to be selected for further development. In support of surface ship advanced technology development and transformation, the surface ship community has instituted a technology evaluation process to coordinate, identify, prioritize, and integrate technology insertion and development efforts and assist RDT&E community efforts to initiate appropriate technology development. The current acquisition guidelines require the development of critical technologies after Milestone A. If significant gap analysis, planning, and early development efforts are not conducted in parallel with Concept Development the Navy will not be able to provide broad, cross-platform direction to surface navy development efforts in an effective manner and will not effectively leverage limited resources to quicken the pace of both development and transition of critical mission technologies for timely acquisition.

**AGOR OCEAN** - Funding supports the acquisition of general purpose research vessels which will conduct science, educational and engineering operations in all oceans, and will be operated by the University Oceanographic Laboratory System (UNOLS).

**LCC Class ESA** - Assessments of the LCC 19 & 20 will be conducted to determine life extensions under project 0408.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Ocean Class AGOR</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued support for necessary preliminary efforts in order to award detail design and procurement contract.</p>	0.915 0	- 0	- 0
<p><b>Title:</b> SURFTECH</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued identification, prioritization, and integration of technology insertion and development efforts and assist the RDT&amp;E community efforts to initiate appropriate technology development. SURFTECH will provide continuous analysis of and feedback to</p>	0.510 0	0.437 0	- 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0408: <i>Ship Development (ADV)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
ongoing technology development efforts to ensure project relevance and timely transition to meet acquisition schedules, which will be documented in the Technology Plan.  <b>FY 2011 Plans:</b> Continued identification, prioritization, and integration of technology insertion and development efforts and assist the RDT&E community efforts to initiate appropriate technology development. SURFTECH will provide continuous analysis of and feedback to ongoing technology development efforts to ensure project relevance and timely transition to meet acquisition schedules, which will be documented in the Technology Plan.			
<b>Title:</b> LCC CLASS ESA  <b>FY 2010 Accomplishments:</b> Conducted Extended Sustainment Assessments as directed by OPNAV N86 for both USS Blue Ridge (LCC 19) and USS Mount Whitney (LCC 20). Efforts are focused on assessing major Hull Mechanical & Engineering (HM&E) and C5I system, determining what is required to ensure operational availability, and build proposal to extend service life to 2029 (60 years). Initial assessments are complete, recommendations are being developed, and presentations to Senior Navy Leadership are underway.	3.948 0	-	-
<b>Articles:</b>			
<b>Accomplishments/Planned Programs Subtotals</b>	5.373	0.437	-

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2012</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• SCN/5087: <i>Oceanographic Ships</i>	0.000	88.561	89.000	0.000	89.000	0.000	0.000	0.000	0.000	0.000	177.561

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

NONE

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0409: <i>DDG-51 Flt III Concept Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0409: <i>DDG-51 Flt III Concept Development</i>	6.925	-	5.707	-	5.707	14.879	15.304	7.962	-	0.000	50.777
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

DDG 51 FLT III Concept Development study - Funding is provided in FY 2010 to evaluate design options associated with FLT III.

In accordance with the approved FY 2010 reprogramming request, the Department intends to reprogram funding to support required FY 2011 efforts.

DDG 51 FLT III Preliminary Design - Funding is provided beginning in FY 2012 for preliminary design efforts associated with introduction of Flight III in FY16. The current plan will support the Finite Element Analysis (FEA) of the Deckhouse Structure, EMX Analysis, which will include Electromagnetic Signatures, Electromagnetic Interference (EMI), Electromagnetic Pulse (EMP), and Radiation Hazard. It will also include Electrical Power capability increase and Distribution analysis, Cooling Systems analysis, Topside Signature testing, and Weight and Stability analysis and life cycle margin improvement.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Proj:0409 DDG-51 Flt III Concept Development	6.925	-	5.707
<b>Articles:</b>	0		0
<b>FY 2010 Accomplishments:</b> Flight III Concept Development initiated in FY10.			
<b>FY 2012 Plans:</b> Begin Preliminary Design efforts to reflect Flight III impacts on DDG 51 Class ships, to include superstructure structural modifications, air conditioning plant upgrades, and additional Ship Service Electrical Power increase.			
<b>Accomplishments/Planned Programs Subtotals</b>	6.925	-	5.707

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• SCN/2122: <i>DDG 51 Class</i>	2,483.578	2,970.174	2,319.432	0.000	2,319.432	3,405.523	3,181.055	2,995.554	2,513.377	4,437.368	81,401.161

**D. Acquisition Strategy**

DDG 51 FLT III - Acquisition Strategy will support production of DDG 51 FLT III.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0409: <i>DDG-51 Flt III Concept Development</i>

**E. Performance Metrics**

None

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0409: <i>DDG-51 Flt III Concept Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete			
DDG 51 FLT III Concept Study	WR	NSWC:Dahlgren, VA	1.230	-		-		-		-	0.000	1.230		
DDG 51 FLT III Concept Study	WR	NSWC:Carderock, MD	0.940	-		-		-		-	0.000	0.940		
DDG 51 FLT III Concept Study	WR	SPAWAR:Charleston, SC	0.180	-		-		-		-	0.000	0.180		
DDG 51 FLT III Concept Study	FFRDC	JHU:Baltimore, MD	0.666	-		-		-		-	0.000	0.666		
DDG 51 FLT III Concept Study	MIPR	CPSD:Columbia, SC	0.500	-		-		-		-	0.000	0.500		
DDG 51 FLT III Concept Study	C/CPAF	BIW:Bath, ME	0.500	-		-		-		-	0.000	0.500		
DDG 51 FLT III Concept Study	WR	NRL:Washington, DC	0.127	-		-		-		-	0.000	0.127		
DDG 51 FLT III Concept Study	C/CPAF	NGSB:Pascagoula, MS	0.500	-		-		-		-	0.000	0.500		
DDG 51 FLT III Concept Study	C/CPAF	Seaport:Washington, DC	1.654	-		-		-		-	0.000	1.654		
DDG 51 FLT III Concept Study	MIPR	DTIC:Ft. Belvoir, VA	0.225	-		-		-		-	0.000	0.225		
DDG 51 FLT III Concept Study	Various	Various:Washington, DC	0.403	-		-		-		-	0.000	0.403		
DDG 51 FLT III Preliminary Design	WR	NSWC:Carderock, MD	-	-		3.000	Feb 2012	-		3.000	8.000	11.000		
DDG 51 FLT III Preliminary Design	C/CPAF	Seaport:Washington, DC	-	-		2.707	Feb 2012	-		2.707	7.400	10.107		
DDG 51 FLT III Contract Design	WR	NSWC:Dahlgren, VA	-	-		-		-		-	22.745	22.745		
<b>Subtotal</b>			6.925	-		5.707		-		5.707	38.145	50.777		
<b>Project Cost Totals</b>			6.925	-		5.707		-		5.707	38.145	50.777		

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0409: <i>DDG-51 Flt III Concept Development</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 0409</b>																												
DDG 51 FLT III Concept Development																												
DDG 51 FLT III Preliminary Design																												
DDG 51 FLT III Contract Design																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 0409: <i>DDG-51 Flt III Concept Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0409</b>				
DDG 51 FLT III Concept Development	4	2010	2	2011
DDG 51 FLT III Preliminary Design	2	2012	1	2014
DDG 51 FLT III Contract Design	4	2013	2	2015



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 2474: <i>LSD Design &amp; Total Ship Integration</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2474: <i>LSD Design &amp; Total Ship Integration</i>	-	-	6.588	-	6.588	11.643	20.661	27.698	19.399	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

LSD(X) is expected to functionally replace LSD 41 class (8 ships) and LSD 49 class (4 ships) for embark, transport, control, insert, sustainment, and extract of Marine Air-Ground Task Force elements and supporting forces by helicopters, landing craft, and amphibious vehicles. New design efforts are required to identify viable alternatives, including examining a reduced cost variant of LPD 17 Class. FY12 efforts continue the Analysis of Alternatives (AoA) and all Milestone (MS) A documentation that began in FY11. FY13 efforts complete the AoA and MS A and begin Capabilities Development Documentation (CDD) and Preliminary Design (PD). FY10 and FY11 LSD(X) efforts are budgeted in PE 0604311N.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> LSD DESIGN/TOTAL SHIP INTEGRATION	-	-	6.588
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Conduct the Analysis of Alternatives (AoA) and prepare required documentation for Milestone A and Gate 2.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	6.588

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

N/A

**D. Acquisition Strategy**

Predecisional, expect competition will be part of the acquisition strategy after MS A.

**E. Performance Metrics**

Predecisional, performance metrics will be developed in parallel with the CDD.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 2474: <i>LSD Design &amp; Total Ship Integration</i>

Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>Analysis of Alternatives (AoA)</b>								▲	—	—	—																	
<b>Acquisition Milestones</b>													▲															
<b>Preliminary Design/ Contract Design</b>													▲	—	—	—	—	—	—	—								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 2474: <i>LSD Design &amp; Total Ship Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2474</b>				
Analysis of Alternatives (AoA)	4	2011	1	2013
Milestone A	2	2013	2	2013
Preliminary Design/Contract Design	2	2013	1	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3195: <i>JCC(X)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3195: <i>JCC(X)</i>	7.007	-	-	-	-	-	-	-	-	0.000	7.007
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

JCC(X) was planned to be a mobile, self-sustaining platform with robust C4ISR capability for a Joint Force Maritime Component Commander (JFMCC) or Joint Force Commander and staff and provides in-theater command and control should a land-based headquarters be unavailable, constrained or threatened. JCC(X) was renamed LCC(R) as the replacement for LCC 19 and 20. The LCC(R) program has been deferred. C2 capability will remain resident in LCC 19 and 20, CVNs and large-deck amphibs.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> JCC (X)			
<b>Articles:</b>	7.007 0	-	-
<b>Description:</b> Budgeted funds provide the afloat/ashore command and control (C2) feasibility study efforts and Gate Process documentation, including closeout. Evaluate ship concept options to field a ship based solution.			
<b>FY 2010 Accomplishments:</b> Perform R3B directed feasibility study efforts reaching Gate 2 decision. Perform close out for LCC(R) design efforts. Conduct study to evaluate ship concept options to field a ship based solution. Conduct sensitivity analysis to inform priorities and capability attributes for the LCC(R) way ahead.			
<b>Accomplishments/Planned Programs Subtotals</b>	7.007	-	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3226: <i>Green Water Craft</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3226: <i>Green Water Craft</i>	1.425	1.359	-	-	-	-	-	-	-	0.000	2.784
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Green Water Craft which will provide maritime security and stability operations and increased maritime domain awareness in compliance with Global Maritime Security objectives and in direct support of Global Fleet Stations (GFS). Funding will provide for craft feasibility and sizing study and subsystem Mockups in support of initial craft production.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Green Water Craft	1.425	1.359	-
<b>Articles:</b>	0	0	
<b>Description:</b> In support of initial craft production, Government and contractor engineering support will conduct craft feasibility and sizing studies to be used to develop Command and Control System and Pilot House Static Mockups.			
<b>FY 2010 Accomplishments:</b> Began development effort to develop a concept Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) system one line diagram for the Force Protection Coastal (FP-C). Initiated scheduling of a Technical Working Group (TWG) to validate C4ISR requirements and systems for the FP-C platform.			
<b>FY 2011 Plans:</b> Command and Control Mockup Delivery Mockup Awards			
<b>Accomplishments/Planned Programs Subtotals</b>	1.425	1.359	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A



**UNCLASSIFIED**

**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3226: <i>Green Water Craft</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 3226</b>																												
Green Water Craft Sizing Study Award		■																										
Command and Control Mockup Award		■																										
Green Water Craft Sizing Study Report			■																									
Command and Control Mockup Delivery					■																							
Pilot House Static Mockup Award						■																						
Pilot House Static Mockup Delivery									■																			



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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3226: <i>Green Water Craft</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 3226</i></b>				
Green Water Craft Sizing Study Award	2	2010	2	2010
Command and Control Mockup Award	2	2010	2	2010
Green Water Craft Sizing Study Report	3	2010	3	2010
Command and Control Mockup Delivery	1	2011	1	2011
Pilot House Static Mockup Award	2	2011	2	2011
Pilot House Static Mockup Delivery	1	2012	1	2012

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3261: <i>TAGOS Design &amp; Total Ship Integration</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3261: <i>TAGOS Design &amp; Total Ship Integration</i>	-	-	9.918	-	9.918	-	-	-	-	0.000	9.918
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Preliminary Ship Design and contract efforts to support procurement of a T-AGOS Class vessel in FY13.  
T-AGOS ocean surveillance ships have a single mission to gather underwater acoustical data and operate to support the anti-submarine warfare mission.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> T-AGOS Design and Acquisition	-	-	9.918
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Conduct necessary contract and preliminary design efforts in order to award detail design and procurement contract in FY13.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	9.918

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• SCN/5030: <i>TAGOS Surtass Ships</i>	0.000	0.000	0.000	0.000	0.000	280.000	0.000	0.000	0.000	0.000	280.000

**D. Acquisition Strategy**

TBD

**E. Performance Metrics**

None



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3261: <i>TAGOS Design &amp; Total Ship Integration</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 3261</b>																												
Preliminary Contract Design																												
Detail Design & Construction Award																												
Start of Construction (SOC)																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 3261: <i>TAGOS Design &amp; Total Ship Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 3261</i></b>				
Preliminary Contract Design	1	2012	3	2013
Detail Design & Construction Award	4	2013	4	2013
Start of Construction (SOC)	4	2014	4	2014

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603564N: <i>Ship Prel Design &amp; Feasibility Studies</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	10.198	-	-	-	-	-	-	-	-	0.000	10.198
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Adds.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Low Signature Defensive Weapon System for Surface Combatant Craft	3.824	-
<b>FY 2010 Accomplishments:</b> Low Signature Defensive Weapon System for Surface Combatant Craft		
<b>Congressional Add:</b> SUPPORT FOR NAVAL SHIP HYDRODYNAMICS TEST FACILITY	3.187	-
<b>FY 2010 Accomplishments:</b> This effort will fund the contract to continue developing components for the wavemaking system in the Maneuvering and Seakeeping (MASK) Basin.		
<b>Congressional Add:</b> Bow Lifting Body Ship Research	3.187	-
<b>FY 2010 Accomplishments:</b> Continue developing and transitioning lifting body technologies to support future acquisition programs that consider single hull configurations.		
<b>Congressional Adds Subtotals</b>	10.198	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds.

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603570N: <i>Advanced Nuclear Power Systems</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	258.803	366.509	463.683	-	463.683	515.256	540.456	515.944	460.043	Continuing	Continuing
0000: <i>UNDIST</i>	-	-	1.998	-	1.998	2.097	2.098	2.198	2.298	Continuing	Continuing
1258: <i>Nuclear Technology Development</i>	55.277	56.013	59.170	-	59.170	60.028	60.819	62.106	63.411	Continuing	Continuing
2692: <i>CVN 21 Propulsion Plant Development</i>	82.232	66.643	65.808	-	65.808	62.100	57.398	56.409	-	0.000	390.590
3219: <i>SBSD Nuclear Technology Development</i>	107.452	179.257	285.367	-	285.367	347.095	405.460	394.731	394.334	Continuing	Continuing
3221: <i>Training Platform Replacement</i>	13.842	64.596	51.340	-	51.340	43.936	14.681	0.500	-	0.000	188.895

**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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	258.808	366.509	459.244	-	459.244
Current President's Budget	258.803	366.509	463.683	-	463.683
Total Adjustments	-0.005	-	4.439	-	4.439
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	4.980	-	4.980
• Rate/Misc Adjustments	-	-	-0.541	-	-0.541
• Congressional General Reductions Adjustments	-0.005	-	-	-	-

**Change Summary Explanation**

Technical: Not applicable.

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
PE 0603570N: *Advanced Nuclear Power Systems*

Schedule: Not applicable.



**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603570N: <i>Advanced Nuclear Power Systems</i>	<b>PROJECT</b> 0000: <i>UNDIST</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0000: <i>UNDIST</i>	-	-	1.998	-	1.998	2.097	2.098	2.198	2.298	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> ANPS	-	-	1.998
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	1.998

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603570N: <i>Advanced Nuclear Power Systems</i>	<b>PROJECT</b> 1258: <i>Nuclear Technology Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1258: <i>Nuclear Technology Development</i>	55.277	56.013	59.170	-	59.170	60.028	60.819	62.106	63.411	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Nuclear Technology Development	55.277	56.013	59.170
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> N/A			
<b>FY 2011 Plans:</b> N/A			
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	55.277	56.013	59.170

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603570N: <i>Advanced Nuclear Power Systems</i>				<b>PROJECT</b> 2692: <i>CVN 21 Propulsion Plant Development</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2692: <i>CVN 21 Propulsion Plant Development</i>	82.232	66.643	65.808	-	65.808	62.100	57.398	56.409	-	0.000	390.590
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> CVN 21 Propulsion Plant Development	82.232	66.643	65.808
<b>Articles:</b>	0	0	0
<b>Description:</b> N/A			
<b>FY 2010 Accomplishments:</b> N/A			
<b>FY 2011 Plans:</b> N/A			
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	82.232	66.643	65.808

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603570N: <i>Advanced Nuclear Power Systems</i>	<b>PROJECT</b> 3219: <i>SBSD Nuclear Technology Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3219: <i>SBSD Nuclear Technology Development</i>	107.452	179.257	285.367	-	285.367	347.095	405.460	394.731	394.334	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> SBSD Nuclear Technology Development	107.452	179.257	285.367
<b>Articles:</b>	0	0	0
<b>Description:</b> N/A			
<b>FY 2010 Accomplishments:</b> N/A			
<b>FY 2011 Plans:</b> N/A			
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	107.452	179.257	285.367

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>				
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			PE 0603570N: <i>Advanced Nuclear Power Systems</i>				3221: <i>Training Platform Replacement</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3221: <i>Training Platform Replacement</i>	13.842	64.596	51.340	-	51.340	43.936	14.681	0.500	-	0.000	188.895
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Training Platform Replacement	13.842	64.596	51.340
<b>Articles:</b>	0	0	0
<b>Description:</b> N/A			
<b>FY 2010 Accomplishments:</b> N/A			
<b>FY 2011 Plans:</b> N/A			
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	13.842	64.596	51.340

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>								
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>			PE 0603573N: <i>Advanced Surface Machinery Sys</i>								
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>											
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	17.319	5.459	18.249	-	18.249	28.345	25.745	18.654	15.651	Continuing	Continuing
2471: <i>Integrated Power Systems (IPS)</i>	5.370	5.459	18.249	-	18.249	28.345	25.745	18.654	15.651	Continuing	Continuing
9999: <i>Congressional Adds</i>	11.949	-	-	-	-	-	-	-	-	0.000	11.949

**A. Mission Description and Budget Item Justification**

The Electric Ship Office (ESO) is responsible for developing and executing the Next Generation Integrated Power System (NGIPS) Technology Development Roadmap (TDR) and transition plans, as well as providing power system solution alternatives to new and existing platforms. The ESO's initial efforts are to coordinate the ongoing electric power efforts of the PEOs and Office of Naval Research, establish the technical basis and strategic direction for Naval power system architectures, develop decision making tools, and establish technical standards.

This PE funds the development of specific and future electric ship technologies for all future surface ships, with the focus on integrated power systems, which provide total ship electric power, including electric propulsion, power conversion and distribution, and combat system and mission load interfaces to the electric power system.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	20.553	5.459	5.408	-	5.408
Current President's Budget	17.319	5.459	18.249	-	18.249
Total Adjustments	-3.234	-	12.841	-	12.841
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.194	-			
• Program Adjustments	-	-	12.930	-	12.930
• Section 219 Reprogramming	-0.012	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.089	-	-0.089
• Congressional General Reductions	0.012	-	-	-	-
Adjustments					
• Congressional Add Adjustments	-3.040	-	-	-	-

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603573N: *Advanced Surface Machinery Sys*

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

**Project: 9999: Congressional Adds**

- Congressional Add: *Integrated Power System Dense Harmonic Filter Design*
- Congressional Add: *High Density Power Conversion and Distribution Equipment*
- Congressional Add: *Surf Combatant Hybrid Propulsion/Power Generation*
- Congressional Add: *Next Gen Shipboard Int Pwr Fuel Efficiency Enhancer*
- Congressional Add: *Integrated Advanced Ship Control (IASC)*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	1.593	-
	1.195	-
	6.373	-
	1.593	-
	1.195	-
Congressional Add Subtotals for Project: 9999	11.949	-
Congressional Add Totals for all Projects	11.949	-

**Change Summary Explanation**

FY12: Added funds (\$12.2M) to project 2471 for Tactical Energy Investments.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>				<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2471: <i>Integrated Power Systems (IPS)</i>	5.370	5.459	18.249	-	18.249	28.345	25.745	18.654	15.651	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project supports the Integrated Power Systems (IPS) program. IPS provides total ship electric power, including electric propulsion, and power conversion and distribution. The DDG 1000 will be an electric drive ship with an integrated power architecture. USS Makin Island (LHD 8) integrates an electric auxiliary propulsion motor for low speed operations and mechanical drive for higher speed operations. IPS reduces acquisition and operating costs of naval ships and increases military effectiveness. IPS leverages investments in technologies that will be useable by both military and commercial sectors.

IPS has the potential to revolutionize the design, construction, and operation of U.S. naval ships by using electricity as the primary energy transfer medium aboard ship. The flexibility of electric power transmission allows power generating modules with various power ratings to be connected to propulsion loads and ship service in any arrangement that supports the ship's mission at lowest overall cost. Systems engineering in IPS is focused on increasing the commonality of components used across ship types and in developing modules which will be integral to standardization, zonal system architectures, and generic shipbuilding strategies. The purpose of increased commonality is to reduce the total cost of ship ownership by using common modules composed of standard components and/or standard interfaces.

IPS addresses ship platform program goals through: reduced ship acquisition cost through integration of propulsion and ship's service prime movers; lower ship operational costs resulting from more flexible operating characteristics and more efficient components; reduced ship construction costs by allowing more extensive modular construction of power generation, distribution, and loads; improved ship survivability and reduced vulnerability through increased arrangement flexibility and improved electrical system survivability; reduced manning through improved power management systems and reduced on-board maintenance requirements; improved ship signature characteristics; improved design adaptability to meet future requirements of multiple ship types or missions; integrating power management and protection by fully utilizing the power electronics in the system to perform fault protection as well as power conversion and load management functions; simplified technology insertion which allows new technologies to be installed within IPS much less expensively than presently possible; and, reduced machinery system acquisition costs through utilization of commercially shared technologies and components.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> IPS Component & System Development	2.500	2.175	9.649
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
System Development: Continue to conduct detailed design and prototype fabrication of power conversion equipment for advanced architecture. Continue to improve baseline power system performance by performing analysis, modeling and simulation, life cycle cost analysis, producibility studies, module development, ship integration, architecture design, ship electric architectures and high			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
<p>power weapons systems requirements, and related efforts. Continue to evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include fuel cells, high-energy weapons, high power radars, and advanced power electronics.</p> <p><b>FY 2011 Plans:</b> System Development: Continue to conduct detailed design and prototype fabrication of power conversion equipment for advanced architecture. Continue to improve baseline power system performance by performing analysis, modeling and simulation, life cycle cost analysis, producibility studies, module development, ship integration, architecture design, ship electric architectures and high power weapons systems requirements, and related efforts. Continue to evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include fuel cells, high-energy weapons, high power radars, and advanced power electronics.</p> <p><b>FY 2012 Plans:</b> IPS Component &amp; System Development:  <ul style="list-style-type: none"> <li>* Continue assessments of NGIPS alternate architectures to best meet emerging ship requirements.</li> <li>* Develop technical and operational concepts for improving shipboard energy management utilizing energy storage modules.</li> <li>* Continue to improve baseline power system performance by performing analysis, modeling and simulation, life cycle cost analysis, producibility studies, module development, and ship integration studies and planning.</li> <li>* Continue to evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include high-energy weapons including rail guns, high power radars including Air and Missile Defense Radar (AMDR), and advanced power electronics.</li> <li>* Complete source selection and award contract(s) for design, build, and test of an ESM Full Scale Engineering Demonstration Module (EDM).</li> <li>* Complete source selection and award contract(s) for design, build, and test of an Advanced Power Generation Module (4MW Generator / Propulsion Derived Ship Service (PDSS)).</li> <li>* Perform analysis and evaluate benefits of sub-component upgrades to LM2500 including, but not limited to: Compressor Airfoil Tip Lengthening; Non linear VSV scheduling; High Pressure Recoup (Orifice Optimization); Inlet/Exhaust Flow Optimization; and, thermal Barrier Coatings.</li> <li>* Analyze alternatives for supplying power to advanced radars, combat systems, and electric weapons power demands and potential interfaces to develop optimum alternative solutions.</li> <li>* Determine alternatives for energy management and fuel efficiency improvement, and power system upgrade options for ships in service.</li> <li>* Continue to develop / modify IPS ship configuration documentation including concepts of operations, system level descriptions, and module performance specifications as necessary to support power system requirements.</li> </ul> </p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	
* Continue to upgrade ship power system smart product model to support cost / performance tradeoffs of alternative IPS ship configurations and evaluation of emerging electric power system and component technologies.					
<b>Title:</b> IPS Component & System Test					
		<b>Articles:</b>	2.720	3.134	6.000
			0	0	0
<b>FY 2010 Accomplishments:</b> System Test: Continue to conduct land based testing of power conversion equipment at NSWCCD, Philadelphia, PA to mitigate potential risks associated with a fielded IPS system and reduce ship's signature, improve survivability and efficiency by fabricating components, inserting into the IPS test site or an appropriate test platform. Continue to conduct demonstrations to maintain and develop the critical engineering capability and capacity to insert future high power weapon systems (radars, lasers and electromagnetic launch weapons) into DDG-1000, future flights of the DDG 51 class, future amphibious ships, and other ship classes. Continue to conduct demonstrations to show improved performance and potential to reduce combat system costs.					
<b>FY 2011 Plans:</b> System Test: Continue to conduct land based testing of power conversion equipment at NSWCCD, Philadelphia, PA to mitigate potential risks associated with a fielded IPS system and reduce ship's signature, improve survivability and efficiency by fabricating components, inserting into the IPS test site or an appropriate test platform. Continue to conduct demonstrations to maintain and develop the critical engineering capability and capacity to insert future high power weapon systems (radars, lasers and electromagnetic launch weapons) into DDG-1000, future flights of the DDG 51 class, future amphibious ships, and other ship classes. Continue to conduct demonstrations to show improved performance and potential to reduce combat system costs.					
<b>FY 2012 Plans:</b> IPS Component & System Test: * Continue to conduct land based testing of NGIPS modules in order to increase energy efficiency and fuel savings, improve survivability and enable advanced sensors and weapons (i.e., AMDR, Railgun). * Complete land based testing of a Functional Equivalent (FE) Energy Storage Module (ESM). FE ESM will validate interface requirements, employ an open architecture, and utilize components from multiple sources. * Participate in the At-Sea demonstration of the ESM onboard the Green Fleet demonstration ship in conjunction with the Fleet Readiness Research and Development program. * Take delivery of the ONR developed compact power components, (Bi-direction Power Converter and Multi-Functional Power Converter). Conduct land based testing of compact power components and transition into platform applications per the signed Technology Transition Agreements (TTAs) between ONR and PMS-320.					
<b>Title:</b> Platform Transition					
		<b>Articles:</b>	0.150	0.150	2.600
			0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p><b><i>FY 2010 Accomplishments:</i></b> Platform Specific: Continue to develop IPS configurations in support of all future surface ship programs. Continue to develop / modify IPS ship configuration documentation including concepts of operations, System Level description / Requirements, and module performance specifications as necessary to support power system requirements for the DDG-51and other future ships. Continue to improve ship power system smart product model to support cost / performance tradeoffs of alternative IPS ship configurations and evaluation of emerging electric power system and component technologies.</p> <p><b><i>FY 2011 Plans:</i></b> Platform Specific: Continue to develop IPS configurations in support of all future surface ship programs. Continue to develop / modify IPS ship configuration documentation including concepts of operations, System Level description / Requirements, and module performance specifications as necessary to support power system requirements for the DDG-51and other future ships. Continue to improve ship power system smart product model to support cost / performance tradeoffs of alternative IPS ship configurations and evaluation of emerging electric power system and component technologies.</p> <p><b><i>FY 2012 Plans:</i></b> Platform Transition: * Continue to develop IPS configurations in support of future surface ship acquisition programs. * Develop alternative power and propulsion solutions for future flights of the DDG 51 Class and near term large amphibious ships. * Develop alternative solutions to decrease shipboard energy usage and improve fuel efficiency.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	5.370	5.459	18.249

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

**D. Acquisition Strategy**  
IPS is included in the DDG 1000, and is a candidate for all other future surface ships. The NGIPS Technology Development Roadmap is based on the Navy's 30 year shipbuilding plan and candidate systems developed to support near term ship opportunities.

**E. Performance Metrics**  
The Integrated Power System (IPS) project within the Electric Ships Office (ESO) will: mitigate 20% of Next Generation IPS (NGIPS) Technology Development Roadmap activities/risks; Address 20% of the relevant specs and standards written addressing components and subsystems on the NGIPS roadmap; Execute 100% of the signed Technology Transition Agreements with ONR; Complete 100% of the advanced developments currently planned for the Energy Storage Module and Power Generation Module.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary HW Development	C/CPFF	Alion Science Corp:Fairfax VA	5.925	0.900	Oct 2010	0.600	Oct 2011	-		0.600	0.000	7.425	
Primary HW Development	C/CPFF	Curtiss-Wright EMD:Pittsburgh, PA	10.750	-		-	Oct 2011	-		-	0.000	10.750	
Primary HW Development	C/CPFF	Compact Power FNC Transition:TBD	-	0.500	Feb 2011	1.000	Oct 2011	-		1.000	6.700	8.200	
Primary HW Development	WR	NSWCCD-SSES:Phila, PA	27.741	1.200	Oct 2010	1.249	Oct 2011	-		1.249	0.000	30.190	
Primary HW Development	C/CPFF	Syntek:Arlington, VA	-	0.900	Oct 2010	0.900	Oct 2011	-		0.900	0.000	1.800	
Primary HW Development	C/CPFF	Bath Iron Works:Bath, ME	-	0.250	Oct 2010	0.250	Oct 2011	-		0.250	0.000	0.500	
Primary HW Development	C/CPFF	NGSB:Pascagoula, MS	-	0.250	Oct 2010	0.250	Oct 2011	-		0.250	0.000	0.500	
Primary HW Development	C/CPFF	ESM/Adv PGM:TBD	-	-		8.000	Mar 2012	-		8.000	0.000	8.000	
<b>Subtotal</b>			44.416	4.000		12.249		-		12.249	6.700	67.365	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NSWCCD-SSES:Phila, PA	22.581	1.459	Oct 2010	4.400	Oct 2011	-		4.400	0.000	28.440	
Developmental Test & Evaluation	C/CPFF	Compact Power:TBD	-	-		1.600	Oct 2011	-		1.600	0.000	1.600	
<b>Subtotal</b>			22.581	1.459		6.000		-		6.000	0.000	30.040	

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		66.997	5.459		18.249	-		18.249	6.700	97.405	

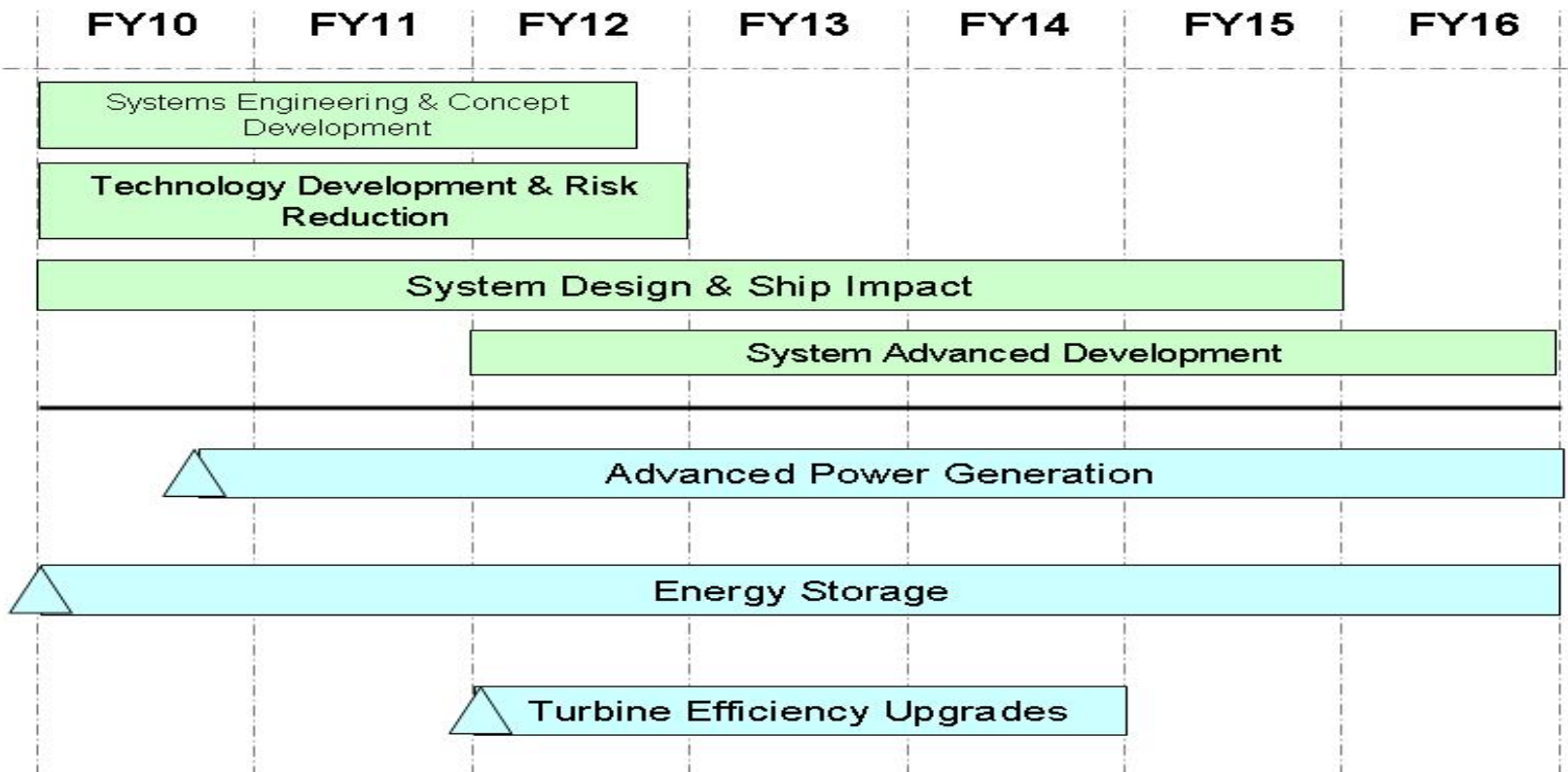
**Remarks**  
IPS efforts funded as part of PE 0603513N Project 2471 in FY 2009 and earlier.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>



# ESO Budget / Schedule



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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 2471: <i>Integrated Power Systems (IPS)</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 2471</i></b>				
System Engineering & Concept Development	1	2010	3	2012
Technology Development & Risk Reduction	1	2010	4	2012
System Design & Ship Impact	1	2010	4	2015
System Advanced Development	1	2012	4	2016
Advanced Power Generation	3	2010	4	2016
Energy Storage	1	2010	4	2016
Turbine Efficiency Upgrades	1	2012	4	2014

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	11.949	-	-	-	-	-	-	-	-	0.000	11.949
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Adds

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Integrated Power System Dense Harmonic Filter Design <b>FY 2010 Accomplishments:</b> N/A	1.593	-
<b>Congressional Add:</b> High Density Power Conversion and Distribution Equipment <b>FY 2010 Accomplishments:</b> High density power conversion and distribution equipment: Develop the requirements and associated designs for high-density electric power architectures including electric power distribution and conversion equipment for the development of subscale proof of concept prototype hardware for evaluation.	1.195	-
<b>Congressional Add:</b> Surf Combatant Hybrid Propulsion/Power Generation <b>FY 2010 Accomplishments:</b> Surface Combatant Hybrid Propulsion/Power Generation: Develop requirements, perform trade studies, design and fabricate hardware to validate the design parameters in support of a prototype Hybrid Electric Drive (HED) for surface combatants.	6.373	-
<b>Congressional Add:</b> Next Gen Shipboard Int Pwr Fuel Efficiency Enhancer <b>FY 2010 Accomplishments:</b> Next Generation Shipboard Integrated Power Fuel Efficiency Enhancer: Continue the development of power dense Integrated power System (IPS) and Hybrid Electric Drive (HED) technologies suitable for surface combatant and submarine propulsion, enhanced power generation, and power conversion. Power dense electric machines and power conversion solutions enable hybrid propulsion systems that save fuel and provide increased critical power for additional payload capabilities. These developments allow advanced IPS or HED system to be incorporated in future and existing warships, including the re-started DDG51 line. Specifically, develop requirements, perform trade studies, design hardware, and fabricate any hardware necessary to validate the design parameters.	1.593	-
<b>Congressional Add:</b> Integrated Advanced Ship Control (IASC)	1.195	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603573N: <i>Advanced Surface Machinery Sys</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b><i>FY 2010 Accomplishments:</i></b> Continue the technical enhancement which includes the standardization of hardware and software interfaces, evolving to a fully-open architecture configuration that will apply to all US Navy ships. The primary focus will be to standardize interconnecting interfaces. Software development that supports commonality across the US Navy fleet will be integrated into the system, in accordance with the common Navy data library of components, for graphical user interface (GUI) requirements. To support system development, initial prototype and operational testing was accomplished in a land-based environment.		
<b>Congressional Adds Subtotals</b>	11.949	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	421.994	226.288	286.784	-	286.784	327.014	336.043	177.549	121.434	Continuing	Continuing
3096: <i>Littoral Combat Ship</i>	103.508	75.675	100.157	-	100.157	173.912	201.162	74.653	41.570	Continuing	Continuing
3129: <i>LCS Mission Package Development</i>	157.905	109.048	141.715	-	141.715	143.134	129.902	102.896	79.864	Continuing	Continuing
4018: <i>Littoral Combat Ship Construction</i>	96.847	41.565	44.912	-	44.912	9.968	4.979	-	-	0.000	198.271
9999: <i>Congressional Adds</i>	63.734	-	-	-	-	-	-	-	-	0.000	63.734

**A. Mission Description and Budget Item Justification**

This Program Element (PE) provides funds for detailed design, development, construction, integration, and testing of the Littoral Combat Ship (LCS). LCS will be a fast, agile, and networked surface combatant with capabilities optimized to defeat asymmetric threats, and assure naval and joint force access into contested littoral regions. It will use open-systems architecture design, modular weapons, and sensor systems, and a variety of manned and unmanned vehicles to expand the battle space and project offensive power into the littoral.

LCS will operate with focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions, including littoral anti-submarine warfare (ASW), anti-surface warfare (SUW) and mine countermeasures (MCM). LCS will also possess inherent capabilities, regardless of mission package installed, including Intelligence, Surveillance, Reconnaissance (ISR), Homeland Defense, Maritime Interdiction/Interception Operations (MIO), Anti-Terrorism/Force Protection (AT/FP), air self-defense, joint littoral mobility, Special Operating Forces (SOF), and logistic support for movement of personnel and supplies. This relatively small, high-speed surface combatant will complement the U.S. Navy's Surface Fleet by operating in environments where it is less desirable to employ larger, multi-mission ships. LCS will have the capability to deploy independently to overseas littoral regions, remain on station for extended periods of time either with a battle group or through a forward-basing arrangement and will be capable of underway replenishment. LCS will operate with Carrier Strike Groups, Surface Action Groups, in groups of other similar ships, or independently for diplomatic and presence missions. Additionally, LCS will have the capability to operate cooperatively with the U.S. Coast Guard and Allies.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	422.746	226.288	183.419	-	183.419
Current President's Budget	421.994	226.288	286.784	-	286.784
Total Adjustments	-0.752	-	103.365	-	103.365
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	7.150	-			
• SBIR/STTR Transfer	-5.040	-			
• Program Adjustments	-	-	111.500	-	111.500
• Section 219 Reprogramming	-2.849	-	-	-	-
• Rate/Misc Adjustments	-	-	-8.135	-	-8.135
• Congressional General Reductions Adjustments	-0.013	-	-	-	-

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

**Project: 9999: Congressional Adds**

    Congressional Add: *Revised Acquisition Strategy*

    Congressional Add: *MIW Modules Prog - Cong*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	59.751	-
	3.983	-
Congressional Add Subtotals for Project: 9999	63.734	-
Congressional Add Totals for all Projects	63.734	-

**Change Summary Explanation**

FY12 increases reflect funding to support LCS Training (Seaframe, Mission Module, and LCS Irregular Warfare Module), LCS SUW and MCM Mission Modules, Mission Module Non Line of Sight (NLOS) Restructuring, and LCS Production support.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3096: <i>Littoral Combat Ship</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3096: <i>Littoral Combat Ship</i>	103.508	75.675	100.157	-	100.157	173.912	201.162	74.653	41.570	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The RDT&E portion of the LCS Program is comprised of design and development efforts required to deliver the Flight 0 Class Ships, including integration with modular MCM, ASW, and SUW mission packages, and construction of the first two Flight 0 Class Ships, the USS Freedom (LCS 1) delivered September 2008 and the USS Independence (LCS 2) delivered December 2009. It includes the design and development effort required to support the introduction and deployment of a Flight 0+ baseline for the ships awarded in FY09 with the incorporation of lessons learned from the design and construction of USS Freedom (LCS 1) and USS Independence (LCS 2), including improved waterjets and a waterjet tunnel extension on the Lockheed Martin (LM) LCS Design. Additionally, it includes design and development efforts required to support the design baseline for the six year block buy in FY10-15. This baseline will include lessons learned from the LCS 1 through LCS 4.

The LCS design and development phases include platform design and development, experimentation and ship system design and integration, hull platform testing, development of a Technical Data Package (TDP), total ship system engineering and integration, planning and conduct of system testing, including procurement of ordnance in support of testing.

The R&D portion of LCS funding is also comprised of formal Developmental and Operational Assessment testing of the LCS Ships and Mission Packages. Test and Evaluation (T&E) will concentrate on verifying integration and interoperability of employed technologies and systems in the LCS Seaframe designs and modular mission packages to achieve the mission capabilities and performance requirements as defined in the LCS Program's Flight 0 and Flight 0+ Capabilities Development Documents (CDD). T&E functions will include the evaluation of Critical Technical Parameters (CTP), Measures of Effectiveness (MOE), Measures of Suitability (MOS), and Key Performance Parameters (KPP) for the core Seaframe and the focused missions.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> LCS Class Design Services</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Provides for Class Design Services efforts and a contract to both industry design teams for continued design refinement of the Flight 0 and Flight 0+ baseline configurations and design development of both designs for the future LCS Class ships.</p> <p><b>FY 2010 Accomplishments:</b> Award Class Design Services contracts for both LCS industry teams. Conduct Industry Systems Engineering design activities supporting the completion and transition to detailed design of the Flight 0+ and FY10 Block Buy baselines, including all required reporting documentation. Translate the Flight 0+ and FY10 Block Buy baseline design drawings and associated documentation,</p>	<p>21.343</p> <p>0</p>	<p>-</p>	<p>-</p>

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3096: <i>Littoral Combat Ship</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
any systems/component standardization along with information obtained as a result of the Post Delivery Test and Trials into new design baselines, which incorporate production, assembly and fabrication lessons learned from the previous Seaframes as well as operator feedback from the Seaframe and Mission Package Crews obtained during the Testing and Trials Period. Develop, review, and approve changes identified by the industry and/or government team. Maintain configuration management of multiple LCS baselines.				
<b>Title:</b> LCS Program Management				
<b>Articles:</b>		6.000	2.320	2.311
<b>Description:</b> Provides for overall LCS Program operations including technical, production, and logistics oversight, and acquisition, contract, Earned Value (EV), risk, science and technology and financial management.		0	0	0
<b>FY 2010 Accomplishments:</b> Supported the delivery of USS Freedom to the Navy in December 2009. Continue contract administration of transition to new design baselines for Flight 0+ and awarded two FY10-15 Block Buy ship contracts, one to each contractor team. Completed development of all required Milestone B documentation. Continue to manage execution of USS Independence and USS Freedom formal Developmental and Operational Testing, including integration efforts with Mission Packages. Conduct contract administration of the development of new design baselines for future ships, including supporting affordability business cases. Finalized the LCS acquisition strategy supporting the Navy's decision to continue with both designs in a dual-award. Finalized strategy and planning activities for follow on ships contract awards. Finalized all Milestone B activities.				
<b>FY 2011 Plans:</b> Continue contract administration for all Flight 0+ ships. Revise the Acquisition Strategy to support the Navy decision to continue with both designs. Update Milestone B documents to reflect the revised acquisition strategy to include all required DoD and Service reviews of products and continue preparations for a Milestone B Defense Acquisition Board. Develop a total program acquisition and contracting plan to support future year planning. Continue to manage execution of USS Independence and USS Freedom formal Developmental and Operational Testing. Continue to manage the development of two LCS TDPs.				
<b>FY 2012 Plans:</b> Continue contract administration for all Flight 0+ ships. Continue to manage execution of USS Independence and USS Freedom formal Developmental and Operational Testing. Continue management of LCS TDP development.				
<b>Title:</b> LCS System-of-Systems Development, Engineering & Experimentation				
<b>Articles:</b>		32.900	10.294	14.725
		0	0	0

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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**Description:** Provides for LCS Program systems engineering in support of Flight 0, Flight 0+ and new FY10 Block Buy baseline design, development, certification, production (including ship system design and integration) combat system and C4I design, integration, and test, aviation (manned and unmanned) integration, modular MCM, ASW, and SUW mission package integration, logistics product development and various systems engineering activities required to perform risk analyses of new design and production technology concepts.

**FY 2010 Accomplishments:**

Flight 0 baseline:

Conduct systems engineering to develop solutions for emergent issues during completion of USS Independence and Acceptance Trials including multiple certifications, and for emergent issues during USS Freedom post delivery tests and trails including FY10 Continuous Maintenance Availability (CMAV), early deployment and RIMPAC10. Complete engineering for SH-60B datalink integration. Manage integration with SUW Mission Package components and conduct Independent Verification and Validation (IV&V) and systems engineering for emergent integration issues.

Flight 0+ baseline:

Conduct systems engineering to develop solutions for Flight 0+ baseline for design and production issues highlighted in USS Freedom and USS Independence testing and LCS 3 and 4 production, including, for example, Hydrogen Sulfide elimination from USS Independence AFFF by biocide injection, development of new helo handling for LCS 3, MIDE seals transition to production, 11m RHIB latch solution development, and topside design analyses. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of Flight 0+ baseline transition into production. Develop facilities support plans for CONUS LCS locations.

FY10 Block Buy baseline:

Complete and obtain approval for all required systems engineering Milestone B (MS B) documentation, (including the conduct of aluminum corrosion and fatigue materials testing (including full scale testing) required to obtain a Technology Readiness Level of 6. Develop, approve and document the technical baseline for the FY10 Block Buy of 20 ships (updates to ICD, SPD, Build Specification, ECPs, JTDs, RFDs) and support the source selection via systems engineering reviews/ analyses. At Post award, manage the development, approval and transition to detailed design and production of the both baselines.

**FY 2011 Plans:**

Flight 0 baseline:

Conduct systems engineering to develop solutions for emergent issues during USS Independence and USS Freedom post delivery tests and trails including Seaframe Developmental Testing and USS Freedom Final Contract Trials (FCT) and Post

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Shakedown Availability (PSA). Manage integration with SUW MP on USS Freedom and MCM on USS Independence and conduct Independent Verification and Validation (IV&amp;V) and systems engineering for emergent integration issues.</p> <p>Flight 0+ and FY10 Block Buy baselines: Conduct systems engineering to develop solutions for Flight 0+ and FY10 baselines for design/production issues highlighted in USS Freedom and USS Independence testing and LCS 3 and 4 production, risk areas likely to include combat system integration, off-board vehicle communications, and watercraft launch, recovery and handling. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of both baselines in transition into production.</p> <p><b>FY 2012 Plans:</b> Flight 0 baseline: Conduct systems engineering to develop solutions for emergent issues during USS Independence and USS Freedom post delivery tests and trails including Seaframe Operational and Developmental Testing, TSSTs, and LCS 2 FCT and PSA. Manage integration with SUW MP on USS Independence and MCM on USS Freedom and conduct Independent Verification and Validation (IV&amp;V) and systems engineering for emergent integration issues.</p> <p>Flight 0+ and FY10 Block Buy baselines: Conduct systems engineering to develop solutions for Flight 0+ and FY10 baselines for design/production issues highlighted in LCS Freedom and USS Independence testing and LCS 3, 4, 5 and 6 production, risk areas likely to include network integration, machinery control, and MP Software integration. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of both baseline's transition into production.</p>				
<p><b>Title:</b> LCS Total System Training Architecture</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides for an LCS shore-based training capability to satisfy individual, unit, team and force training to meet Train to Qualify CDD requirements. Leverages DDG 1000 Total Ship Training System efforts, as well as trainers previously procured for LCS.</p> <p><b>FY 2010 Accomplishments:</b> Update Trainers to ship as-built configurations to meet train to qualify certification requirements. Begin integration efforts with the LCS Mission Module Trainer and integrate the USS Freedom and USS Independence Trainers. Develop trainers at Surface Warfare Officer's School (SWOS) for LCS training. Complete the USS Independence Trainer variant.</p> <p><b>FY 2011 Plans:</b></p>		9.900 0	10.835 0	37.741 0



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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Complete enhancements to present USS Freedom and USS Independence configurations. Provide crew training to meet Train to Qualify requirements and provide shore training facility with Navy Continuous Training Environment (NCTE) capability for multiple crews to complete required battle group training from shore facility.</p> <p><b>FY 2012 Plans:</b> Develop Virtual Ship Software environment for use on future LCS Trainers and backfit on present trainers. Develop training software in order to meet Train to Qualify CDD KPP. Complete trainer curriculum at SWOS. Transition ONR Sponsor software, Virtual Maintenance Performance Aide (VMPA) Training environment for continued development of training architecture for maintenance and engineering.</p> <p>Funds training essential to achieve LCS designed operational availability with minimally manned rotational crew. Distance Support - Funds installation of Secret Internet Protocol, Routed (SIPR) and Non-Secure Internet Protocol Router (NIPR) distance support applications and hardware for LCS reach back to the CLASSRON/MSD. Includes SIPR distance support development, testing, fielding and training, along with hardware/software. Supports classified applications such as Force Protection requirements, Casualty Reports (CASREPs), and sensitive medical info. Includes development, testing and fielding for support of on-board operations, maintenance, and crew administration and training applications and tools. Provides for the development of the software, procurement of shore hardware, integration and testing of the tools, development of the training packages, and delivery to the ships.</p>				
<p><b>Title:</b> LCS Test &amp; Evaluation</p> <p><b>Articles:</b></p> <p><b>Description:</b> Execute formal LCS Test and Evaluation (T&amp;E) program, Developmental Testing and Operational Testing (DT/OT) including Live Fire Test and Evaluation (LFT&amp;E) and procurement of T&amp;E Ordnance. Developmental Test and C4I design, integration, and test, aviation (manned and unmanned) integration, modular MCM, ASW, and SUW mission package integration, logistics product development and various systems engineering activities required to perform risk analyses of new design and production technology concepts.</p> <p><b>FY 2010 Accomplishments:</b> Flight 0 baseline: Conduct systems engineering to develop solutions for emergent issues during completion of USS Independence and Acceptance Trials including multiple certifications, and for emergent issues during USS Freedom post delivery tests and trails including FY10 Continuous Maintenance Availability (CMAV), early deployment and RIMPAC10. Complete engineering for SH-60B datalink integration. Manage integration with SUW Mission Package components and conduct systems engineering for emergent integration issues. USS Independence DT commenced with Seaframe certifications, aviation integration events, and initial</p>		33.365 0	52.226 0	45.380 0

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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<p>integration of MCM Mission Package. Electronic Chart Display and Information System - Navy (ECDIS-N) OT was completed on LCS 2. The LCS LFT&amp;E Management Plan was completed.</p> <p>Flight 0+ baseline: Conduct systems engineering to develop solutions for Flight 0+ baseline for design and production issues highlighted in USS Freedom and USS Independence testing and LCS 3 and 4 production, including, for example, Hydrogen Sulfide elimination from USS Independence Aqueous Film Forming Foam (AFFF) by biocide injection, development of new helo handling for LCS 3, Mide Corporation seals transition to production, 11m Rigid Hull Inflatable Boat (RHIB) latch solution development, and topside design analyses. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of Flight 0+ baseline transition into production. Develop facilities support plans for CONUS LCS locations.</p> <p>FY10 Block Buy baseline: Complete and obtain approval for all required systems engineering Milestone B (MS B) documentation, (including the conduct of aluminum corrosion and fatigue materials testing (including full scale testing) required to obtain a Technology Readiness Level of 6. Develop, approve and document the technical baselines for the FY10 Block Buy (updates to Interface Control Document (ICD), Specified Performance Document (SPD), Build Specification, Engineering Change Proposal (ECPs), Justification for Technical Determination (JTDs), Request for Deviation (RFDs)) and support the source selection via systems engineering reviews/ analyses. At Post award, manage the development, approval and transition to detailed design and production of the baseline.</p> <p><b>FY 2011 Plans:</b> Flight 0 baseline: Continue Seaframe testing on USS Freedom and USS Independence, including signature trials, air warfare and surface warfare firing events, aviation integration (manned and unmanned systems), and selected sea keeping trials. Conduct detailed SUW Mission Package (MP) DT on LCS 1. Conduct detailed MCM Mission Package DT on LCS 2. Conduct systems engineering to develop solutions for emergent issues during USS Independence and USS Freedom post delivery tests and trails including Seaframe Developmental Testing and USS Freedom Final Contract Trials (FCT) and Post Shakedown Availability (PSA). Manage integration with SUW MP on USS Freedom and MCM on USS Independence and conduct systems engineering and analysis efforts for emergent integration issues. Update the LCS TEMP to reflect mature Acquisition Strategy and Program schedule.</p> <p>Flight 0+ and FY10 Block Buy baselines: Conduct systems engineering to develop solutions for Flight 0+ and FY10 baselines for design/production issues highlighted in USS Freedom and USS Independence testing and LCS 3 and 4 production, risk areas likely to include combat system integration,</p>			
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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p>off-board vehicle communications, and watercraft launch, recovery and handling. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of both baselines to transition into production.</p> <p><b>FY 2012 Plans:</b> Flight 0 baseline: Conduct systems engineering to develop solutions for emergent issues during USS Independence and USS Freedom post delivery tests and trials including Seaframe Operational and Developmental Testing, TSSTs, and LCS 2 FCT and PSA. Manage integration with SUW MP on USS Independence and MCM on USS Freedom and conduct Independent Verification and Validation (IV&amp;V) and systems engineering for emergent integration issues.</p> <p>Flight 0+ and FY10 Block Buy baselines: Conduct systems engineering to develop solutions for Flight 0+ and FY10 baselines for design/production issues highlighted in LCS Freedom and USS Independence testing and LCS 3, 4, 5 and 6 production, risk areas likely to include network integration, machinery control, and MP Software integration. Conduct systems engineering efforts in support of multiple certifications issues for new baseline. Continued management of both baselines to transition into production.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	103.508	75.675	100.157

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 2127: <i>Littoral Combat Ship</i>	1,076.669	1,509.335	1,802.093	0.000	1,802.093	1,766.847	1,781.697	1,852.080	1,534.828	Continuing	Continuing
• 1600: <i>LCS Modules</i>	80.387	82.951	79.583	0.000	79.583	112.538	158.857	262.383	311.801	Continuing	Continuing
• 4221: <i>LCS Module Weapons</i>	0.000	9.808	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0443: <i>Aircraft Procurement, Navy</i>	90.777	47.484	191.986	0.000	191.986	166.843	191.110	158.060	179.932	Continuing	Continuing
• 5110: <i>Outfitting/Post Delivery</i>	2.654	2.787	54.059	0.000	54.059	89.466	112.861	193.147	210.549	Continuing	Continuing
• 1320: <i>LCS Training</i>	0.000	0.000	20.709	0.000	20.709	9.050	24.351	12.747	12.021	Continuing	Continuing

**D. Acquisition Strategy**

The LCS Program takes an evolutionary approach to acquisition that emphasizes competition as the key to achieving affordability. Initially, two industry teams competed against each other with two different LCS designs LCS 1-4, over two flights, Flight 0 and Flight 0+. The revised Acquisition Strategy supports the Navy decision to continue with both designs. The incorporation of lessons learned from the design, construction, and testing of the initial two ships, as well as introduction of improved waterjets and a waterjet tunnel extension on the LM LCS design comprises the Flight 0+ baseline awarded in FY09. A new baseline will be implemented for both designs in the FY10-15 Block Buy.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
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**E. Performance Metrics**

The LCS Program achieved Milestone A and Program Initiation in May 2004, and underwent a Milestone A update in FY09. Milestone B is planned for February 2011.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3096: <i>Littoral Combat Ship</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
LCS 1 & 2 Shore Trainers	C/CPAF	LM, BIW:Various	36.760	10.835	Oct 2010	12.941	Oct 2011	-		12.941	Continuing	Continuing	Continuing
Training Development - Industry	C/FP	TBD:Various	-	-		12.800	Oct 2011	-		12.800	Continuing	Continuing	Continuing
Training Development	WR	NAWC TSD:San Diego, CA	-	-		6.000	Oct 2011	-		6.000	Continuing	Continuing	Continuing
Class Design Services	SS/CPAF	LM, GD:Various	48.340	-		-		-		-	Continuing	Continuing	Continuing
Final Design (Flight 0)	C/CPAF	LM, BIW:Various	175.263	-		-		-		-	Continuing	Continuing	Continuing
Flight 0 C4I	WR	PEO C4I:Various	5.506	-		-		-		-	Continuing	Continuing	Continuing
SH-60B Datalink	C/CPAF	LM, BIW:Various	2.435	-		-		-		-	Continuing	Continuing	Continuing
Distance Support	WR	NAWC TSD:Sand Diego, CA	-	-		6.000	Oct 2011	-		6.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			268.304	10.835		37.741		-		37.741			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government Engineering Support	WR	NSWC/DD:Dahlgren, VA	39.473	2.433	Oct 2010	2.500	Oct 2011	-		2.500	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/PC:Panama City, FL	22.777	0.115	Oct 2010	0.250	Oct 2011	-		0.250	Continuing	Continuing	Continuing
Government Engineering Support	WR	NUWC:Newport, RI	8.807	0.154	Dec 2010	0.100	Oct 2011	-		0.100	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWC AD:Pax River, VA	16.811	1.204	Oct 2010	1.369	Oct 2011	-		1.369	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/CR:Crane, IN	15.940	0.011	Oct 2010	0.100	Oct 2011	-		0.100	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC/SSES:Philadelphia, PA	42.932	3.064	Oct 2010	2.000	Oct 2011	-		2.000	Continuing	Continuing	Continuing
Government Engineering Support	Various	Government Activities:Various	26.901	1.327	Oct 2010	1.500	Oct 2011	-		1.500	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPAF	Alion/CSC:Arlington, VA	36.846	2.644	Jan 2011	2.500	Jan 2012	-		2.500	Continuing	Continuing	Continuing
Contractor Engineering Support	C/CPAF	Various:Various	18.086	0.062	Oct 2010	0.100	Oct 2011	-		0.100	Continuing	Continuing	Continuing
<b>Subtotal</b>			228.573	11.014		10.419		-		10.419			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	C/CPAF	Alion/CSC:Arlington, VA	8.390	3.500	Jan 2011	5.800	Oct 2011	-		5.800	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/PHD:Port Hueneme, CA	19.571	5.500	Oct 2010	5.500	Oct 2011	-		5.500	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/SSES:Philadelphia, PA	26.221	5.900	Oct 2010	4.500	Oct 2011	-		4.500	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/PC:Panama City, FL	3.231	2.500	Dec 2010	3.500	Oct 2011	-		3.500	Continuing	Continuing	Continuing
Test & Evaluation	WR	COMOPTEVFOR:Norfolk, VA	5.414	2.300	Oct 2010	3.500	Nov 2011	-		3.500	Continuing	Continuing	Continuing
Test & Evaluation	WR	NSWC/COR:Corona, CA	3.406	2.580	Oct 2010	2.980	Oct 2011	-		2.980	Continuing	Continuing	Continuing
Test & Evaluation	WR	Various:Various	33.982	14.385	Oct 2010	12.018	Nov 2011	-		12.018	Continuing	Continuing	Continuing
Test & Evaluation/CSS	C/CPAF	LM/GD/Various:Various	21.045	11.891	Oct 2010	8.118	Nov 2011	-		8.118	Continuing	Continuing	Continuing
Test & Evaluation	WR	PEO C4I:Charleston, SC	4.268	1.700	Oct 2010	1.540	Nov 2011	-		1.540	Continuing	Continuing	Continuing
T&E Ordnance	WR	IWS 3:Not Specified	5.677	1.250	Oct 2010	2.230	Dec 2011	-		2.230	Continuing	Continuing	Continuing
<b>Subtotal</b>			131.205	51.506		49.686		-		49.686			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3096: <i>Littoral Combat Ship</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Business Operations / CAVE (PEO SHIPS)	Various	PEO Ships:Washington, DC	4.629	1.600	Jan 2011	1.600	Dec 2011	-		1.600	Continuing	Continuing	Continuing
Program Management Support- SEAPORT	C/CPAF	Alion/CSC:Arlington, VA	20.393	0.200	Dec 2010	0.200	Dec 2011	-		0.200	Continuing	Continuing	Continuing
Program Management Support	Various	Various:Various	6.030	0.398	Dec 2010	0.400	Dec 2011	-		0.400	Continuing	Continuing	Continuing
Program Management Support - Design	C/CPAF	Various:Arlington, VA	1.938	0.122	Dec 2010	0.111	Dec 2011	-		0.111	Continuing	Continuing	Continuing
DAWDF	Various	Not Specified:Not Specified	0.468	-		-		-		-	0.000	0.468	
<b>Subtotal</b>			33.458	2.320		2.311		-		2.311			
<b>Project Cost Totals</b>			661.540	75.675		100.157		-		100.157			

**Remarks**

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

**APPROPRIATION/BUDGET ACTIVITY**

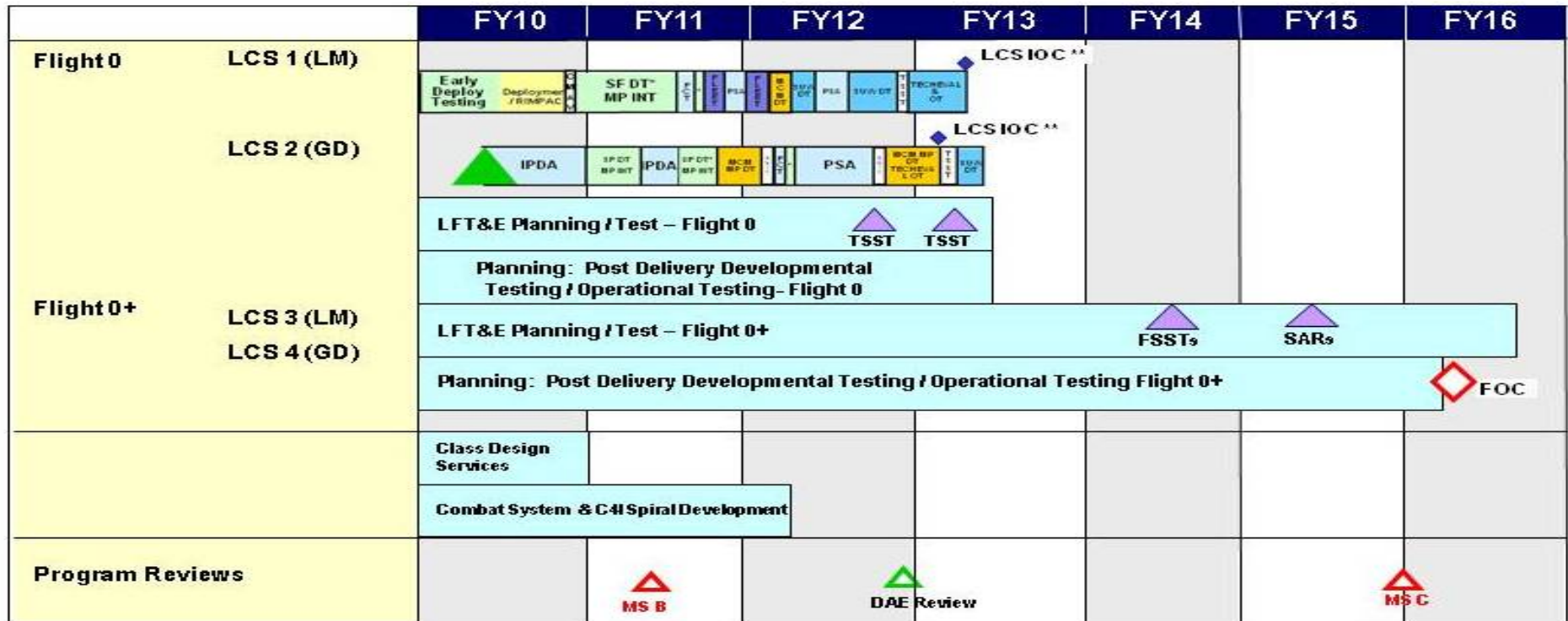
1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0603581N: Littoral Combat Ship (LCS)

**PROJECT**

3096: Littoral Combat Ship



<b>Acronyms</b>	LCS: Littoral Combat Ship	DAE: Defense Acquisition Executive	DT: Developmental Testing	SF: Seaframe
	LM: Lockheed Martin	ASW: Anti-Submarine Warfare	IOT&E: Initial Operational Test & Evaluation	FCT: Final Contract Trials
	GD: General Dynamics	MCM: Mine Countermeasure	FOC: Full Operational Capability	OT: Operational Test
	PDT&T: Post Delivery Trials & Tests	SUW: Surface Warfare	IPDA: Industrial Post-Delivery Availability	
	RIMPAC: Rim of the Pacific Exercise	MP: Mission Package	PSA: Post Shakedown Availability	

**Notes:**  
 \* The Navy has determined that a classified capability will be incorporated into future ASW Mission Packages. This capability will address identified ASW MP requirements.  
 \*\* MP IOC: Currently, IOC for both the MCM and SUW MPs is planned to occur in FY13 when: 1) IOT&E is complete; 2) infrastructure, logistics and a trained crew and support are available; and 3) the first ship with an embarked MCM/SUWMP is a deployable asset assigned to an Operational Commander.

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3096: <i>Littoral Combat Ship</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3096</b>				
Live Fire Test & Evaluation (LFT&E) / Total Ship Survivability Test (TSST) - Flight 0	1	2010	2	2013
Planning; Post Delivery Developmental Testing (DT)/Operational Testing(OT) - Flight 0	1	2010	2	2013
Flight 0 DT / OT	1	2010	2	2013
LFT&E / Full Ship Shock Trial (FSST)- Flight 0+	1	2010	4	2015
Planning: Post Delivery Developmental Testing / Operational Testing - Flight 0+	2	2011	4	2015
Flight 0+ DT / OT	1	2010	1	2016
Class Design Services	1	2010	1	2011
Combat System & C4I Spiral Development	1	2010	4	2015
Milestone B	2	2011	2	2011
Total Ship Survivability Trial (TSST) LCS 1	4	2012	4	2012
Total Ship Survivability Trial (TSST) LCS 2	1	2013	1	2013

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3129: <i>LCS Mission Package Development</i>	157.905	109.048	141.715	-	141.715	143.134	129.902	102.896	79.864	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Program provides focused war fighting capabilities in littoral mine countermeasures, countering small boat threats and littoral anti-submarine warfare to provide assured access to enable the US Joint Force operations in the littoral. Mission module development includes architectures, interfaces and development of mission module. Mission systems development also includes the procurement of the first mission packages to be used on the Flight 0 Littoral Combat Ships (LCS).

Mine Countermeasures (MCM) Mission Packages (MPs) will provide the Joint Force Commander with the capability to conduct MCM operations, open transit lanes for naval and commercial shipping, and open operating areas for naval forces, enabling Joint Force Entry operations. The MCM package consists of the following systems: Coastal Battlefield Reconnaissance & Analysis (COBRA), Airborne Laser Mine Detection System (ALMDS), Organic Airborne & Surface Influence Sweep (OASIS) System, Remote Multi-Mission Vehicle (RMMV), AQS-20A Minehunting Sonar, Airborne Mine Neutralization System (AMNS), Unmanned Surface Vehicle (USV) with Unmanned Surface Sweep System (USSS), Unmanned Undersea Vehicle (UUV) with Low Frequency Broad Band (LFBB) and Support Containers. The individual systems are combined into four modules: Organic Airborne Mine Countermeasures (OAMCM) Module, Remote Mine Hunting Module, Unmanned Influence Sweep Module, and Coastal Mine Reconnaissance Module. The OAMCM Module provides the long-range, airborne capability to conduct mine hunting and clearing operations in littorals zones, confined straits, choke points, and the Amphibious Objective Area (AOA) quickly. The Remote Mine Hunting Module provides an unmanned semi-submersible, long-endurance mine detection and classification capability to effectively hunt large areas for volume and bottom mines. The Unmanned Influence Sweep Module provides an unmanned surface, long endurance bottom sweep capability to clear large areas of mines that may remain after mine-hunting operations are complete. The Coastal Mine Reconnaissance Module will detect mines in the surface zone and beach zone areas, providing the Joint Force Commander with the information needed to clear mines with non-LCS assets and allow military forces to safely and effectively storm the beaches.

Anti-Submarine Warfare (ASW) Mission Packages will provide ASW capabilities while operating in a contested littoral environment. The current ASW Mission Package is comprised of the Low Frequency Bi-Static, Monostatic, Aviation, Modules. Future ASW Mission Packages will include Escort, Torpedo Defense Mission Modules. The ASW MP will provide LCS with the ability to exploit real time undersea data, using maneuver and deception to enhance detection, classification, identification, targeting and destruction of enemy submarines.

The Surface Warfare (SUW) Mission Package (MP) when embarked provides detection, tracking and engagement of Fast Inshore Attack Craft (FIAC). Countering the FIAC small boat threat gives the Joint Force Commander the ability to maximize striking power, shield high value units and successfully move through a restricted area. The SUW MP uses the Gun Mission Module for close in threats, the Surface to Surface Missile Module (SSMM) for mid-range threats and the embarked MH-60R and/or VTUAV, part of the aviation mission module, are used for threat detection, classification and long range engagement. The Maritime Security Module (MSM), when embarked, provides the LCS with the capability to conduct Level II Visit, Board, Search, and Seizure (VBSS) operations to support maritime interdiction missions. The Irregular Warfare Mission Module, when embarked, provides augmented training and medical capability for Theater Security Cooperation (TSC) missions. The LCS Mission Modules Common Equipment consists of enabling products required by all mission packages to provide common hardware interfaces, computer operating

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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environment, communications systems, aviation interface systems and portable development & integration test-sets. Common hardware interfaces include definition, installation and control of mechanical, electrical and cooling requirements common to all mission packages. The Mission Package Computing Environment (MPCE) provides common services and Operating Environment to support all Mission Package Application Software and Open Architecture Products. The Multi-Vehicle Communications System (MVCS) enables the control and data exchange of simultaneous unmanned mission vehicles and the Seaframes. Aviation interface systems include integration and management of data communications, data processing and physical hardware interfaces such as common roll-on/roll-off cabinets/equipment and containers used by all mission packages. Development and integration test-sets provide a mobile operating environment installed in the Mission Package Portable Control Stations (MP-PCS) to serve as a surrogate Seaframe during mission package development and integration test events at test ranges.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Title:</b> System Engineering</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Coordinated with Mission Module (MM) assistant program managers system maturity model with a focus on system and technology readiness levels. Established requirement baselines which lead to technical requirement traceability links into the LCS Mission Package (MP) consolidated Data Object Oriented Requirements System (DOORS) Database. Developed Modeling and Simulation Charter to support LCS MP software development, performance requirement, integration testing, certification testing, and training. Completed development of LCS MM System Engineering Plan, Programmatic Environmental Safety Health Evaluation, Anti- Tamper, Abbreviated Program Protection Plan for MCM, SUW, MVCS, Cost Analysis &amp; Requirements Document, which all in support of MS B documentation development. Completed Preliminary Design Review for SBIR Initiative to reduce mission module weight by employing Composite Containers.</p> <p><b>FY 2011 Plans:</b> Provide system engineering (SE) support for emerging requests from the fleet for new mission requirements. Lead and direct all SE mission module efforts; develop and manage accredited models and simulation tools to support integration, certification, training of all LCS mission packages and hydrodynamic effects encountered by unmanned vehicles as they are launched and recovered from the LCS platforms. Develop Reliability, Availability, and Maintainability-Cost reports. Maintain Requirements Baseline Traceability in Doors. Provide system safety support for mission module test events. Complete all required Certification Test and Evaluation, coordinate Platform IT Risk Approval, finalize Vulnerability Measurement and preparation for connection agreements for MMs for Information Assurance Authority To Operate. Provide configuration Management CCB's and Technical Scope Reviews leading toward ECP development and implementation. Support SBIR transition initiatives. Complete the embarkation/debarkation plans in accordance to the established Holistic Embarkation/Debarkation Guide. Develop plans for transitioning to production efforts.</p> <p><b>FY 2012 Plans:</b> Begin transition of technology from ONR programs including Multi-Vehicle Mission Planner and Supervision of UxV (USV, UAV &amp; UUV) Mission Management by Interactive Teams for combat system commonality, composite containers and light weight</p>	<p>2.698</p> <p>0</p>	<p>2.619</p> <p>0</p>	<p>17.882</p> <p>0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>structures for reducing mission package weight to the LCS mission modules. Provide oversight and guidance as the Principal for Safety for the LCS Mission Modules (MM). Coordinate and lead all environmental compliance, hazardous material management, and occupation health aspects of the LCS MM Program. Provide Configuration Management for managing Technical Scope Reviews capturing all configurations updates. Evaluate Advanced Change/Study Notice and Engineering Change Proposals to add hardware and software capabilities to the mission modules. Complete development of the mission modules requirements baseline with technical requirements traceability links in the consolidated DOORS database. Conduct system engineering readiness reviews. Identify and control all mission package configurations. Conduct all required SE reviews in accordance with NAVSEA Systems Engineering Technical Reviews Manual. Manage all Information Assurance (IA) tasks providing IA Certification Test and Evaluation for all mission areas. Provide support for Requirements Verification and Validation. Provide capability to accomplish Software Readiness Monitoring including the development of software specific readiness criteria and integration considerations. Develop an approach and checklists of required systems engineering tasks required to ensure a successful conduct and approval of the Mission Modules Production Readiness Review. Implement a reliability growth program that provides assessment to determine changes to the Mission Module baselines. The reliability growth program metrics and assessments will provide data to qualify and quantify suitability requirements changes and improvements to lower Total Ownership Costs at the Mission Module level.</p>				
<p><b>Title:</b> Program Management</p> <p align="right"><b>Articles:</b></p>		8.619 0	4.150 0	6.403 0
<p><b>FY 2010 Accomplishments:</b> Continued the program-level program management efforts, including Contract Advisory and Assistance Services (CAAS): business and administrative planning, organizing, directing, coordinating, controlling, and approval actions designated to accomplish overall program objectives which are not associated with specific hardware elements and are not included in systems engineering. Maintained and executed logistic plans, processes and programs to assist in the management and support of Mission Modules (MMs) and Mission Packages (MPs).</p> <p><b>FY 2011 Plans:</b> Continue program management efforts: business and administrative planning, organizing, directing, coordinating, controlling, and approval actions designated to accomplish overall program objectives which are not associated with specific hardware elements and are not included in systems engineering.</p> <p><b>FY 2012 Plans:</b> Continue program management efforts: business and administrative planning, organizing, directing, coordinating, controlling, and approval actions designated to accomplish overall program objectives which are not associated with specific hardware elements and are not included in systems engineering. Provides Integrated Logistics Support for the scheduled test events and for new</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
capabilities of the LCS MMs. Provides validation and verification for technical data. Provides for development of LCS MM specific transportation requirements to Naval support organizations.				
<b>Title:</b> System Test and Evaluation				
		<b>Articles:</b>		
		10.283 0	34.262 0	30.051 0
<b>FY 2010 Accomplishments:</b> Conducted SUW Mission Package (MP) developmental testing (DT) and Quick Reaction Assessment in support of USS Freedom Early Deployment. Continued Mission Package certification efforts for MCM and SUW. Participated in Rim of the Pacific (RIMPAC) 10 with SUW MP on LCS-1. Conducted ASW (DT) workups for ASW DT at SHAREM exercise in WESTPAC with fleet. MCM and SUW Form, Fit & Function Test on USS Independence post Industrial Post Delivery Availability (IPDA). Completed MCM Launch, Handling & Recovery test on USS Independence post IPDA.				
<b>FY 2011 Plans:</b> Conduct seaframe to package work-up and integration testing of the MCM MP aboard LCS 2 (USS INDEPENDENCE). Conduct test planning and execution of the MCM MP Developmental Testing (DT) aboard LCS 2 (USS INDEPENDENCE). Conduct test planning and documentation for the MCM MP DT aboard LCS 1 (USS FREEDOM) planned for FY 2012. Pending Congressional budget cuts conduct test planning and documentation for the SUW MP DT aboard LCS 1 (USS FREEDOM) planned for FY 2012. Perform verification and validation of mission module and mission package requirements. Perform and document analysis and evaluation of test results.				
<b>FY 2012 Plans:</b> Conduct seaframe to package check-out and integration testing of the MCM MP aboard LCS 1 (USS FREEDOM). Conduct test planning and execution of MCM MP DT aboard LCS 1 (USS FREEDOM). Conduct test planning and execution of the MCM MP TECHEVAL and IOT&E aboard LCS 2 (USS INDEPENDENCE). Conduct test planning and execution of SUW MP DT aboard LCS 1 (USS FREEDOM). Conduct test planning, preparation and execution of SUW MP TECHEVAL and IOT&E aboard LCS 1 (USS FREEDOM). Maintain the Mission Package Integration Lab. Support incremental testing and evaluation (including environmental and shock) of modules under integration and certification phases, including managing and supporting test assets needed for all mission package testing. Perform verification and validation of mission module and mission package requirements. Perform and document analysis and evaluation of test results.				
<b>Title:</b> Integration, Assemble, Test and Checkout				
		<b>Articles:</b>		
		1.052 0	0.797 0	8.360 0
<b>FY 2010 Accomplishments:</b> Continued program level Integration, Assembly, Test & Checkout efforts: Technical and functional activities associated with the development and production mission systems, parts, materials and software required to assemble hardware/software elements				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>into mission equipment and integration with seaframes. Led and performed mission system integration test and checkout tasks to support LCS-1 early deployment and LCS-2 post-delivery activities.</p> <p><b>FY 2011 Plans:</b> Continue program level Integration, Assembly, Test &amp; Checkout efforts: Technical and functional activities associated with the development and production mission systems, parts, materials and software required to assemble hardware/software elements into mission equipment and integration with seaframes. This effort includes integration management of mission modules with the seaframes, common processing systems, off board communications systems, aviation systems and common and mission package software products. Effort includes integration engineering at the waterfront in support of ships under construction and under initial testing.</p> <p><b>FY 2012 Plans:</b> Continue program level Integration, Assembly, Test &amp; Checkout efforts: Technical and functional activities associated with the development and production mission systems, parts, materials and software required to assemble hardware/software elements into mission equipment and integration with seaframes. This effort includes integration management of mission modules with the seaframes, common processing systems, off board communications systems, aviation systems and common and mission package software products. Effort includes integration engineering at the waterfront in support of ships under construction and under initial testing. Manage and execute integration, assembly, test and checkout of technology refresh solutions for mission package computing environment, off board communications systems, including the full capability multi-vehicle communication system and the aviation communications systems. Initiate and lead development, integration and testing of the common mission module open architecture and associated architecture products and common mission package software baseline. Lead and manage execution of engineering change proposals required to integrate mission package systems and subsystems into LCS seaframes 1 through 4.</p>				
<p><b>Title:</b> Training</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued development of LCS Mission Modules Mine Counter Measure (MCM) team training capability. Added developed simulated fidelity for MCM launch handling and recovery of unmanned vehicles software development for additional training simulation. Conducted the initial Front End Analysis (FEA) with principal recommendation of a "Virtual Ship Centric" approach to integrate training with the LCS Seaframe that will culminate in a shore based training facility where essential tasks are trained using a virtual reality environment. Began FEA Phase II effort to analyze training curriculum development for transition to Navy Schoolhouses. Tested the simulated environment of the Networked Tactical Training System (NTTS) for transition from ONR Rapid Technology Transition (RTT) efforts to operator familiarization training. NTTS provides entry level MCM unmanned vehicles</p>		13.063 0	7.623 0	17.255 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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maneuverability training at a reduced cost over Common Mission Package Trainer (CMPT). Continued development of CMPT and began effort to integrate CMPT into seaframe trainers to provide whole ship team training capability when delivered. Mission Module (MM) crews were provided training for MCM, ASW and SUW test events. Provided vendor training to new MM crew members.

***FY 2011 Plans:***

Complete development of and install LCS Mission Modules MCM team training capability to support Train to Certify KPP and begin development of CMPT software for SUW team training. Install and integrate CMPT into LCS Shore Based Training Facility (SBTF), perform initial instructor training on CMPT and integrate SBTF into Navy cooperative training environment to support Joint Synthetic training. Begin integration efforts of current MM training capability into the LCS Shore Based training facility. Begin the technical requirements development to integrate MM simulated training into the LCS Seaframe simulated training environment in preparation for a FY 12 connection. NTTS with MCM unmanned vehicle capability will deliver to the SBTF to replace ONR partial capability demonstration system. Begin training curriculum development. Provides initial training for navy instructors on MM simulated training environment. Provide MM crews training for formal MCM and SUW test events. Provide vendor training to replacement MM crew members in accordance with CSPPs.

***FY 2012 Plans:***

Begin transition to a team trainer capability of meeting Train to Certify KPP for team training certification requirements. Begin transition to SUW Gun Mission Module (GMM) Train to Certify capable system course. Initial classes for CMPT and NTTS will be performed to support Train To Certify KPP. Expand NTTS simulated training capability to include SUW mission and improve CMPT and NTTS MCM training capability as new systems are introduced. Begin new training capability development to incorporate findings from program test events. Complete MCM and SUW formal training curriculum instruction development. Procure and install MK-50 30mm Gun Mission Module (GMM) difference course materials at NSWC Damn Neck. Prepare for transition to FEA virtual ship centric training solution. Build courseware, integrate training, and train the trainers. Provide new MM crews and replacement sailors vendor and formal training in accordance with CSPPs.

**Title:** Common Equipment

**Articles:**

28.666	19.685	13.104
0	0	0

***FY 2010 Accomplishments:***

Mission Data Processing - Installed Mission Package Computing Environment (MPCE) onto LCS-1 and LCS-2 seaframes. Developmental testing of MPCE including Mission Package Operating Environment (MPOE) and Mission Package Services (MPS) software during LCS-1 early deployment. Developmental testing of MPCE during MCM and ASW MP end-to-end testing.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2010</b>
<p>Off-board Communications - Continued development of Multi-Vehicle Communications System (MVCS) for communications management with off-board vehicles. Installed and validated initial MVCS capability onto LCS 1 and 2.</p> <p>Aviation Interface - Continued development of the Helo Support Function to provide data paths from the mission vehicles via the H-60R/B helicopter to the seaframes.</p> <p><b>FY 2011 Plans:</b> Mission Data Processing - Develop, test and validate technology refresh design for MPCE hardware and associated MPOE. Perform shipboard Engineering Change Proposals (ECPs) related to MPCE. Perform Open Architecture engineering initial analyses and studies of Open Architecture products. Define requirements for common mission package software and perform SW architectural studies and evaluate options for implementation.</p> <p>Off-board Communications - Continue Development towards full capability of the MVCS used for the management of off board vehicles. Integrate and test RT-1944/U radio terminal set with the mission modules and seaframes. Perform MVCS ECPs on mission module vehicles and LCS seaframes. Perform engineering design, testing and evaluation of communication systems for over-the-horizon range. Perform evaluation, integration testing and installation of cryptographic systems for unmanned vehicles.</p> <p>Aviation Interface - Continue development of the helo support function and helo support kits for employment on the SH-60B and M-60R helicopters. Perform engineering design, testing and evaluation of unmanned air vehicle sensor and communication payloads. Perform development of mission module aviation systems and subsystems for integration and installations on LCS seaframes and for supporting MP developmental test assets.</p> <p><b>FY 2012 Plans:</b> Mission Data Processing - Finalize development, test and validation of technology refresh design for MPCE hardware and associated MPS and Operating Environment. Perform technology refresh implementation and shipboard installations and checkouts. Begin analyses and evaluation of next MPCE technology refresh requirements. Perform ECP's related to MPCE on existing land-based, portable control station and shipboard installed systems. Perform Open Architecture evaluations and initiate implementation. Begin implementation of common mission package software.</p> <p>Off-board Communications - Continue Development towards full capability of the MVCS used for the management of off board vehicles. Integrate and test RT-1944/U radio terminal set with the mission modules and seaframes. Continue developing and performing MVCS ECPs on mission module vehicles and LCS seaframes. Continue performing engineering design, testing and evaluation of aerial communication systems for over-the-horizon range. Continue integration testing and installation of cryptographic systems for unmanned vehicles.</p>			<b>FY 2011</b>
			<b>FY 2012</b>



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Aviation Interface - Continue development and begin implementation of the helo support function and helo support kits for employment on the SH-60B and M-60R helicopters. Continue performing engineering design, testing and evaluation of unmanned air vehicle sensor and communications payloads. Continue performing integration and installations of mission module aviation systems and subsystems on LCS seaframes and on developmental test assets.				
<b>Title:</b> Mine Countermeasures (MCM) Mission Package		12.367	13.412	22.296
		0	0	0
<b>Articles:</b>				
<b>FY 2010 Accomplishments:</b> Conducted at sea integration (end-to-end) testing on SEAFIGHTER FSF-1. Developed Mission Package Application Software (MPAS) build in support of end-to-end tests. Conducted initial integration with LCS sea frame. MCM MP Form, Fit, and Function Test on USS Independence. Corrected deficiencies observed during testing. Integration of USV and Sweep Systems into MCM MP.				
<b>FY 2011 Plans:</b> Conduct RMMV and USV launch, handling, and recovery test on USS Independence and USS Freedom. Conduct Integration Tests of MCM MP on LCS seaframe. Validate and verify test procedures and documentation. Develop MPAS build in Support of MCM MP Developmental Test (DT). Incorporate high priority problem trouble reports (PTRs). Conduct certification of MCM MP to include weapons system certification, Human Systems Integration, Information Assurance, and Safety. Continue development, integration and testing of USV and Sweep systems. Conduct MCM MP DT.				
<b>FY 2012 Plans:</b> Find, fix, and repair technical issues identified during integration and developmental testing. Develop next MPAS build in support of TECHEVAL. Conduct MCM MP TECHEVAL. Continue development, integration and testing of USV and Sweep systems. Procure Two Engineering Development Models (EDMs) of the USV and Sweep Systems upon UISS achieving Milestone B. Commence the initial design of Surface Mine Countermeasures Unmanned Undersea Vehicle with Low Frequency Broadband (SMCM UUV w/LFBB) on LCS				
<b>Title:</b> Anti-Submarine Warfare (ASW) Mission Package		8.563	-	-
		0		
<b>Articles:</b>				
<b>FY 2010 Accomplishments:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Conducted additional at sea (end-to-end) testing to validate correction of deficiencies observed in FY09 AUTEK sea test. Prepared ASW MP #1 to conduct a single developmental test event (1QFY11) focused on the Low Frequency Bi-Static Mission Module employed in an operationally relevant environment.				
<b>Title:</b> Surface Warfare (SUW) Mission Package				
<b>Articles:</b>		66.536 0	26.500 0	26.364 0
<b>FY 2010 Accomplishments:</b> Delivered Gun Mission Module (GMM) Engineering Development Model (EDM) #2, conducted environmental test series, and supported LCS1 USS Freedom on early deployment and Rim of Pacific (RIMPAC) test events. Delivered Surface-to-Surface Missile Module (SSMM) EDM #1. Navy/Army closed out the Non-Line of Sight-Launch System (NLOS-LS) Development and Demonstration (SDD) Contract. Conducted NLOS-LS alternative trade study as directed by OPNAV. Developed training and maintenance plans for the GMM. Completed the Maritime Security Module (MSM) design and delivered Engineering Development Model (EDM) MSM Berthing Modules to LCS-1 in support of early deployment. Conducted design and development of MSM Habitability container. Completed final integration test (FIT) check of the SUW MP (GMM AND SSMM) on LCS-2.				
<b>FY 2011 Plans:</b> Finalize GMM EDM #3 Design and Development. Conduct Structural Test Firing of GMM on LCS2 USS Independence. Conduct Development Test (DT) Planning and Execution. Executed revised SSMM as directed by OPNAV N86 based on Alternative Trade Study. Develop, design, engineer, and test Irregular Warfare (IW) training and medical containers.				
<b>FY 2012 Plans:</b> Find, fix, and repair technical issues identified during integration and developmental testing. Conduct regression testing on proposed fixes. Complete the development of GMM SUW MP #3. Provide developmental engineering support for logistical engineering data and technical publications. Conduct inspection acceptance of SUW MP #3. Incorporate all engineering changes required to resolve Developmental Testing issues identified during testing. Conduct work-ups and dry-runs in support of Initial Operational Test & Evaluation (IOT&E). Conduct IOT&E test events in 4th QTR 2012. Continue to develop, design, engineer, test, and certify the Irregular Warfare (IW) training and medical containers. Conduct system analysis and engineering trade studies for SSMM.				
<b>Title:</b> Mission Package Portable Control Station (MP-PCS) (Formally Portable Mission Package Computing Environment)				
<b>Articles:</b>		1.922 0	-	-
<b>FY 2010 Accomplishments:</b> Continued development and configuration of the MP-PCS to support mission package developmental tests. Provided mission processing and communications capability in support of several MCM and ASW MP tests at various test ranges and facilities. Conducted systems engineering, design, development, and integration tasks to support implementation of a MP-PCS core				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
capability. Tracked/coordinated the development and installation of the MP-PCS components within the transportable support containers. Performed software and hardware integration to support MPCE baseline. Revised Information Assurance plan and network topology, conducted system groom, performed test and checkout of MPCE and ancillary systems.			
<b>Title:</b> Pre-Production Engineering			
<b>Articles:</b>	4.136 0	-	-
<b>FY 2010 Accomplishments:</b> Convert existing ASW and SUW MP TDP data to needed format and develop any needed drawings to complete the MP TDP.			
<b>Accomplishments/Planned Programs Subtotals</b>	157.905	109.048	141.715

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

<u>Line Item</u>	FY 2010	FY 2011	FY 2012 <u>Base</u>	FY 2012 <u>OCO</u>	FY 2012 <u>Total</u>	FY 2013	FY 2014	FY 2015	FY 2016	<u>Cost To Complete</u>	<u>Total Cost</u>
• 2127 : <i>Littoral Combat Ship</i>	1,076.669	1,059.335	1,802.093	0.000	1,802.093	1,766.847	1,781.697	1,852.080	1,534.828	Continuing	Continuing
• 1600 : <i>LCS Mission Modules</i>	80.387	82.951	79.583	0.000	79.583	112.538	158.857	262.383	311.801	Continuing	Continuing
• 4221: <i>LCS Module Weapons</i>	0.000	9.808	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0443 : <i>Aircraft Procurement, Navy</i>	90.777	47.484	191.986	0.000	191.986	166.843	191.110	158.060	179.932	Continuing	Continuing
• 5110: <i>Outfitting/Post Delivery</i>	2.654	2.787	54.059	0.000	54.059	89.466	112.861	193.147	210.549	Continuing	Continuing
• 1320: <i>LCS Training</i>	0.000	0.000	20.709	0.000	20.709	9.050	24.351	12.474	12.021	Continuing	Continuing

**D. Acquisition Strategy**

The LCS Mission Module Acquisition Strategy is employing an incremental procurement approach to allow for the rapid introduction of additional capabilities as system technology matures. This phased plan provides incremental fielding of capability through the introduction of mature programs of record into the respective Mission Packages until the full baseline capability defined in the Capability Development Document (CDD) is reached.

**E. Performance Metrics**

Milestone Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
1.1 System Engineering	WR	NSWC PC:Panama City, FL	1.491	1.491	Dec 2010	9.032	Nov 2011	-		9.032	Continuing	Continuing	Continuing
1.1 System Engineering	WR	NSWC DD:Dahlgren, VA	2.000	0.950	Dec 2010	2.800	Nov 2011	-		2.800	Continuing	Continuing	Continuing
1.1 System Engineering	C/CPFF	Northrop Grumman:Beth Page, NY	4.000	-		2.300	Jan 2012	-		2.300	Continuing	Continuing	Continuing
1.1 System Engineering	WR	SPAWAR PAC:San Diego, CA	1.000	-		1.450	Nov 2011	-		1.450	Continuing	Continuing	Continuing
1.1 System Engineering	WR	NUWC NPT:Newport, RI	0.500	-		1.800	Dec 2011	-		1.800	Continuing	Continuing	Continuing
1.1 System Engineering	C/CPFF	CACI:Fairfax, VA	0.500	2.000	Dec 2010	0.500	Jan 2012	-		0.500	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	NAWC AD:Patuxent River, MD	0.075	0.265	Feb 2011	0.794	Nov 2011	-		0.794	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	SPAWAR PAC:San Diego, CA	0.705	0.289	Dec 2010	0.235	Nov 2011	-		0.235	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	NUWC NPT:Newport, RI	0.350	0.297	Feb 2011	0.297	Dec 2011	-		0.297	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	NSWC PC:Panama City, FL	-	-		2.000	Nov 2011	-		2.000	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	SUPSHIP Gulfcoast:Pascagoula, MS	0.500	-		1.000	Feb 2012	-		1.000	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	SUPSHIP Bath:Bath, ME	0.500	-		1.000	Feb 2012	-		1.000	Continuing	Continuing	Continuing
1.4 Integration, Assembly, Test and Check	WR	NSWC DD:Dahlgren, VA	0.408	1.350	Dec 2010	3.034	Nov 2011	-		3.034	Continuing	Continuing	Continuing
1.12 Common Equipment Development	WR	NSWC PC:Panama City, FL	57.162	10.908	Dec 2010	11.104	Nov 2011	-		11.104	Continuing	Continuing	Continuing
1.12 Common Equipment Development	C/CPFF	Northrop Grumman:Beth Page, NY	15.000	3.727	Jan 2011	-		-		-	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
1.12 Common Equipment Development	WR	NUWC NPT:Newport, RI	5.500	2.329	Dec 2010	-		-		-	Continuing	Continuing	Continuing
1.12 Common Equipment Development	WR	NSWC DD:Dahlgren, VA	1.200	0.721	Nov 2010	-		-		-	Continuing	Continuing	Continuing
1.12 Common Equipment Development	WR	NAVAIR PMA266:Patuxent River, MD	2.500	2.000	Nov 2010	2.000	Nov 2011	-		2.000	Continuing	Continuing	Continuing
1.13 MCM MP	WR	NSWC PC:Panama City, FL	103.188	13.412	Feb 2011	16.296	Nov 2011	-		16.296	Continuing	Continuing	Continuing
1.13 MCM MP	WR	NSWC CD:Little Creek, VA	-	-		6.000	Feb 2012	-		6.000	Continuing	Continuing	Continuing
1.14 ASW MP	WR	Various:Various	153.473	-		-		-		-	Continuing	Continuing	Continuing
1.15 SUW MP	WR	NSWC DD:Dahlgren, VA	145.000	20.774	Mar 2011	22.927	Nov 2011	-		22.927	Continuing	Continuing	Continuing
1.15 SUW MP	WR	NSWC PHD:Port Hueneme, CA	4.000	2.000	Feb 2011	2.500	Dec 2011	-		2.500	Continuing	Continuing	Continuing
1.15 SUW MP	WR	SPAWAR PACIFIC:San Diego, CA	0.705	0.500	Feb 2011	0.937	Nov 2011	-		0.937	Continuing	Continuing	Continuing
1.16 MP-PCS Equipment	WR	Various:Various	3.547	-		-		-		-	Continuing	Continuing	Continuing
1.19 Pre-Production Engineering	WR	Various:Various	8.425	-		-		-		-	0.000	8.425	
<b>Subtotal</b>			511.729	63.013		88.006		-		88.006			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
1.5 Training	WR	NAWC TSD:Orlando, FL	5.033	1.900	Jan 2011	3.000	Jan 2012	-		3.000	Continuing	Continuing	Continuing
1.5 Training	WR	NSWC PC:Panama City, FL	8.000	2.823	Feb 2011	5.715	Nov 2011	-		5.715	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
1.5 Training	WR	NSWC PHD:Port Hueneme, CA	2.000	0.900	Feb 2011	2.500	Dec 2011	-		2.500	Continuing	Continuing	Continuing
1.5 Training	C/CPFF	AAC:Uniontown, PA	2.000	2.000	May 2011	3.800	Mar 2012	-		3.800	Continuing	Continuing	Continuing
1.5 Training	WR	CSCS:Dahlgren, VA	-	-		1.240	Feb 2012	-		1.240	Continuing	Continuing	Continuing
1.5 Training	WR	CNSF:San Diego, CA	-	-		1.000	Feb 2012	-		1.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			17.033	7.623		17.255		-		17.255			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
1.3 System Test and Evaluation	WR	NSWC PC:Panama City, FL	12.000	15.165	Feb 2011	16.183	Nov 2011	-		16.183	Continuing	Continuing	Continuing
1.3 System Test and Evaluation	WR	NSWC DD:Dahlgren, VA	15.000	9.500	Feb 2011	4.000	Nov 2011	-		4.000	Continuing	Continuing	Continuing
1.3 System Test and Evaluation	WR	NUWC NPT:Newport, RI	2.300	2.700	Feb 2011	1.200	Dec 2011	-		1.200	Continuing	Continuing	Continuing
1.3 System Test and Evaluation	WR	NSWC PHD:Port Hueneme, CA	1.500	2.500	Feb 2011	6.200	Dec 2011	-		6.200	Continuing	Continuing	Continuing
1.3 System Test and Evaluation	WR	SPAWAR PAC:San Diego, CA	0.683	2.962	Feb 2011	1.068	Nov 2011	-		1.068	Continuing	Continuing	Continuing
1.3 System Test and Evaluation	WR	COMOPTEVFOR:Norfolk, VA	-	1.435	Feb 2011	1.400	Jan 2012	-		1.400	Continuing	Continuing	Continuing
<b>Subtotal</b>			31.483	34.262		30.051		-		30.051			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Acquisition Workforce	Various	Various:Various	1.047	-		-		-		-	0.000	1.047	

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY

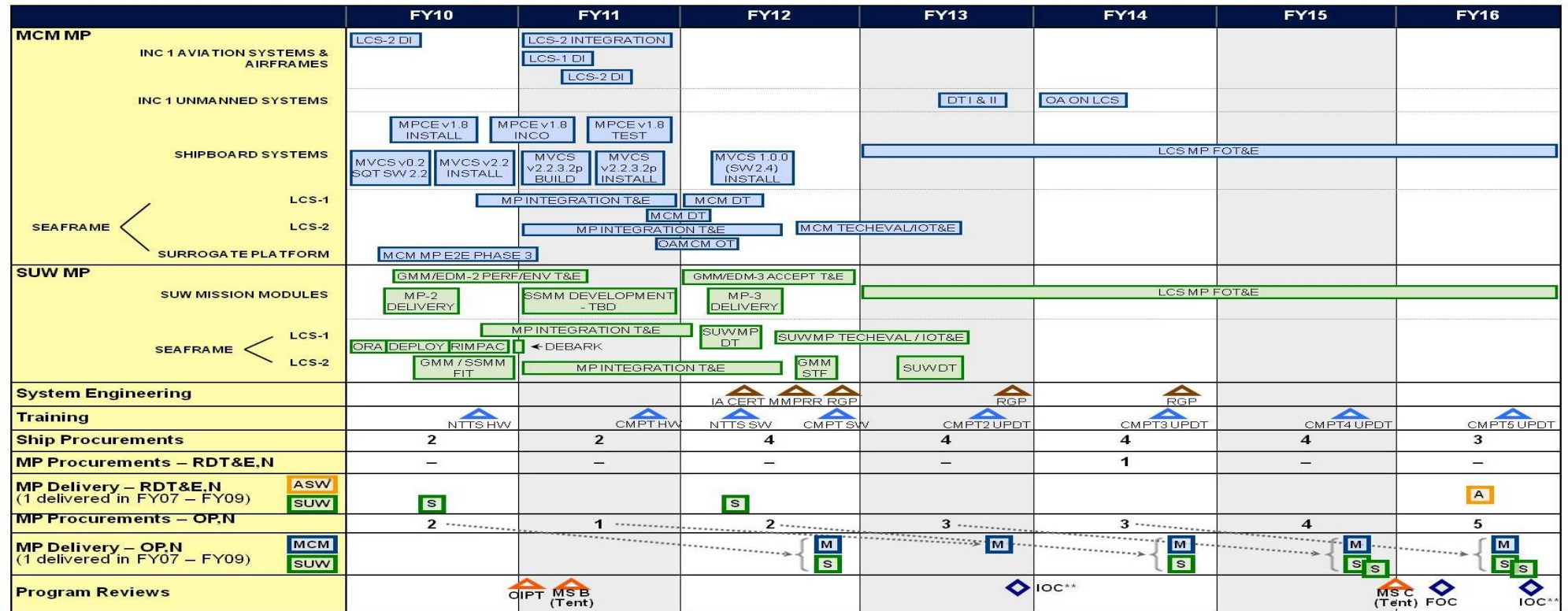
1319: Research, Development, Test & Evaluation, Navy  
BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 ITEM NOMENCLATURE

PE 0603581N: Littoral Combat Ship (LCS)

PROJECT

3129: LCS Mission Package Development



\* Procurement of Increment I ASW MPs is suspended. Follow-on ASW MPs will consist of advanced capabilities under development.

\*\* Currently, IOC for the MCM and SUW MPs is planned to occur in FY13 and IOC for the ASW MP is planned for FY16 when: 1) IOT&E is complete; 2) infrastructure, logistics and a trained crew and support are available; and 3) the first ship with an embarked MCM/SUW MP is a deployable asset assigned to an Operational Commander.

Acronyms

<b>ASW:</b> Anti-Submarine Warfare	<b>GMM:</b> Gun Mission Module	<b>MPCE:</b> Mission Package Computing Environment	<b>RIMPAC:</b> Rim of the Pacific Exercise
<b>CMPT:</b> Common Mission Package Trainer	<b>INCO:</b> Installation and Checkout	<b>MVCS:</b> Multi Vehicle Control System	<b>SQT:</b> Software Qualification Test
<b>DI:</b> Dynamic Interface	<b>IOT&amp;E:</b> Initial Operational Test & Evaluation	<b>NTTS:</b> Network Tactical Training System	<b>SSMM:</b> Surface to Surface Mission Module
<b>DT:</b> Developmental Testing	<b>LCS:</b> Littoral Combat Ship	<b>OA:</b> Operational Assessment	<b>STF:</b> Structural Test Fire
<b>E2E:</b> End to End	<b>MCM:</b> Mine Countermeasure	<b>OAMCM:</b> Organic Airborne MCM	<b>SUW:</b> Surface Warfare
<b>EDM:</b> Engineering Development Model	<b>MMPRR:</b> MM Production Readiness Review	<b>ORA:</b> Operational Readiness Assessment	<b>SW:</b> Software
<b>FOT&amp;E:</b> Follow-on Operational Test & Evaluation	<b>MP:</b> Mission Package	<b>RGP:</b> Reliability Growth Program	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3129</b>				
SUW MP#2 Delivery	2	2010	2	2010
RIMPAC 10 w/SUW MP (LCS 1)	3	2010	4	2010
SUW/MCM MP Integration (LCS 1)	4	2010	1	2012
SUW/MCM MP Integration (LCS 2)	1	2011	3	2012
MCM MP DT (LCS 2)	4	2011	1	2012
SUW MP DT (LCS 1)	2	2012	2	2012
SUW MP#3 Delivery	2	2012	2	2012
SUW MP IOT&E (LCS 1)	4	2012	1	2013
MCM MP DT (LCS 1)	1	2012	2	2012
MCM MP Tech Eval (LCS 2)	4	2012	1	2013
SUW MP Tech Eval (LCS 1)	4	2012	1	2013
MCM MP IOT& E (LCS 2)	4	2012	1	2013
SUW MP DT (LCS 2)	1	2013	2	2013
SUW/MCM MP FOT&E	1	2013	4	2016
MCM MP Aviation Systems and Airframe Dynamic Interface Testing (LCS 2)	1	2010	2	2010
MCM Aviation Systems and Airframe Integration (LCS 2)	1	2011	4	2011
MCM MP Aviation Systems and Airframe Dynamic Interface Testing (LCS 1)	1	2011	2	2011
MCM MP Aviation Systems & Airframe Dynamic Interface Testing (LCS 2)	2	2011	3	2011
MCM MP Unmanned Systems DT I & II	3	2013	4	2013
MCM MP Unmanned Systems Operational Assessment	1	2014	2	2014
MCM MP Shipboard System MPCE vs.1.8 Install	2	2010	3	2010

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 3129: <i>LCS Mission Package Development</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MCM MP Shipboard System MPCE vs.1.8 INCO	4	2010	2	2011
MCM MP Shipboard System MPCE vs.1.8 Test	3	2011	4	2011
MCM MP Shipboard System MVCS vs. 0.2 SQT SW 2.2	1	2010	2	2010
MCM MP Shipboard System MVCS vs. 2.2 Install	3	2010	4	2010
MCM MP Shipboard System MVCS vs. 2.2.3.2p BUILD	1	2011	2	2011
MCM MP Shipboard System MVCS vs. 2.2.3.2p INSTALL	3	2011	4	2011
MCM MP Shipboard System MVCS vs. 1.0.0 (SW 2.4) INSTALL	1	2012	3	2012
MCM MP Integration T&E (LCS 1)	4	2010	4	2011
MCM MP Integration T&E (LCS 2)	1	2011	3	2012
MCM MP E2E Phase 3 (Surrogate)	2	2010	1	2011
MCM MP OAMCM Operational Testing (LCS 2)	4	2011	2	2012
SUW MP GMM/EDM-2 Performance & Environmental T&E	2	2010	2	2011
SUW MP GMM/EDM-3 Acceptance T&E	1	2012	4	2012
SUW MP GMM-SSMM FIT	2	2010	4	2010
SUW MP GMM Structural Test Fire	3	2012	4	2012
SUW MP ORA/Deployment (LCS 1)	1	2010	3	2010

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>				<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
4018: <i>Littoral Combat Ship Construction</i>	96.847	41.565	44.912	-	44.912	9.968	4.979	-	-	0.000	198.271
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Littoral Combat Ship (LCS) is a fast, agile, and networked surface combatant with capabilities optimized to defeat asymmetric threats, and assure naval and joint force access into contested littoral regions. The threats challenging our naval forces in the littorals include mines, attacks by small surface craft, and quiet diesel submarines armed with a variety of anti-ship weapons. Such threats have great potential to be effectively employed by many less capable countries and non-state actors to prevent access, and use, of littoral areas by U.S. forces.

The LCS construction phase includes the construction of two LCS Flight 0 Class Ships, one each of two designs, and includes Government Furnished Equipment (GFE) for ships systems, Final System Design (FSD), Detail Design, introduction of final interface requirements for integration with mission packages from the Mission Systems and Ship Integration Team (MSSIT), and Outfitting and Post Delivery (OF/PD).

Data as of 12 January 2011:

USS Freedom (LCS 1)

Basic Construction: 521.0

Change Orders: 0.5

GFE: 12.0

Other: 3.5

Total Cost\*: 537.0

USS Independence (LCS 2)

Basic Construction: 635.0

Change Orders: 3.5

GFE: 7.0

Other: 7.5

Total Cost\*: 653.0

Non End Cost Item: FSD/MSSIT 25.0 (LCS1), 54.0 (LCS2)

Non End Cost Item: OF/PD 108.4 (LCS1), 101.8 (LCS2)

FSD/MSSIT costs for USS Freedom and USS Independence are not true construction costs and are costs associated with design completion.

\* Does not include OF/PD and early design costs

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>		<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Title:</b> Construction</p> <p><b>Articles:</b></p> <p><b>Description:</b> Provides for the construction, production, test and trials of USS Freedom and USS Independence ships, including execution of Change Orders and procurement of Government Furnished Equipment (GFE).</p> <p><b>FY 2010 Accomplishments:</b> Completion of USS Independence.</p>		55.125 0	-	-
<p><b>Title:</b> Outfitting and Post Delivery</p> <p><b>Articles:</b></p> <p><b>Description:</b> Provides for the completion of ship outfitting to include: ship provisioning and fuel initial load out of repair parts, spares, and test equipment in accordance with allowance list ; providing technical manuals and required drawings; installation and validation of PMS and EOSS; crew training and completion of ship system certification requirements. Provides for the integration and testing of the Seaframe and separately acquired mission packages, implementation of instrumentation packages and validation of structural, sea keeping, hydrodynamic performance, emergent support during the execution of Post Delivery Test &amp; Trials (PDT&amp;T), Post-Shakedown Availability (PSA) to incorporate Engineering Change Proposals that allow for correction of trial card deficiencies, and mission critical upgrades, as required.</p> <p><b>FY 2010 Accomplishments:</b> For USS Freedom: Conducted OF/PD efforts for the Early Deployment of USS Freedom. Initiated Post Shakedown Availability (PSA) planning efforts to include engineering, work package development, and procurement of long-lead materials. Performed emergent repairs to support the accomplishment of USS Freedom Post Delivery Test and Trials (PDT&amp;T). Completed ship instrumentation and performed data collection and analysis of critical ship performance parameters. Conducted PDT&amp;T events to validate ship system performance against requirements.</p> <p>For USS Independence: Completed initial outfitting of the ship. Performed emergent repairs in support of Industrial USS Independence Post Delivery Test and Trials (PDT&amp;T). Conduct Industrial Post Delivery Availabilities (IPDA I and IPDA II) planning and execution for USS Independence to correct Trial Card discrepancies and incorporate critical safety and mission critical ECPs that must be completed prior to initiation of PDT&amp;T.</p> <p><b>FY 2011 Plans:</b> For USS Freedom:</p>		41.722 0	41.565 0	44.912 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012
Continue PSA Planning efforts to include engineering, work package development, and procurement of materials. Review the projected work package for assignment of additional work items into two separate PSA periods (PSA 1 and PSA 2). Perform emergent repairs in support of PDT&T. Conduct Final Contract Trials (FCT) and provide Technical Support for the INSURV Board. Execute PSA 1 to include drydocking, correction of Trial Card discrepancies. Accomplishment of engineering changes and equipment repairs.			
For USS Independence: Plan and execute an Industrial Post Delivery Availability (IPDA 3) to accomplish critical work in preparation for possible ship deployment. Begin PSA Planning efforts to include engineering, work package development, and procurement of long-lead materials. Perform emergent repairs in support of PDT&T.			
<b><i>FY 2012 Plans:</i></b> For USS Freedom: Perform emergent repairs in support USS Freedom Post Delivery Test and Trials. Continue Execute PSA 2 execution to complete remaining Trial Card corrections, engineering changes and equipment repairs. Perform emergent repairs in support of IPDA for USS Freedom Post Delivery Test and Trials.			
For USS Independence: Perform emergent repairs in support of IPDA for USS Independence Post Delivery Test and Trials. Complete Accomplish Final Contract Trials (FCT) and provide Technical Support for the INSURV Board. Correct Trial Card discrepancies and begin. Accomplish PSA execution, including Shock Foundations to include drydocking, correction of shock deficiencies, Trial Card correction, accomplishment of engineering changes and equipment repairs.			
<b>Accomplishments/Planned Programs Subtotals</b>	96.847	41.565	44.912

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 2127: <i>Littoral Combat Ship</i>	1,076.669	1,509.335	1,802.093	0.000	1,802.093	1,766.847	1,781.697	1,852.080	1,534.828	Continuing	Continuing
• 1600: <i>LCS Modules</i>	80.387	82.951	79.583	0.000	79.583	112.538	158.857	262.383	311.801	Continuing	Continuing
• 4221: <i>LCS Module Weapons</i>	0.000	9.808	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0443: <i>Aircraft Procurement, Navy</i>	90.777	47.484	191.986	0.000	191.986	166.843	191.110	158.060	179.932	Continuing	Continuing
• 5110: <i>Outfitting/Post Delivery</i>	2.654	2.787	54.059	0.000	54.059	89.466	112.861	193.147	210.549	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 1320: <i>LCS Training</i>	0.000	0.000	20.709	0.000	20.709	9.050	24.351	12.747	12.021	Continuing	Continuing

**D. Acquisition Strategy**

The LCS Program takes an evolutionary approach to acquisition that emphasizes competition as a key to achieving affordability. Initially, two industry teams competed against each other with two different LCS designs, LCS 1-4, over two flights, Flight 0 and Flight 0+.

The Program office revised the Acquisition Strategy to support the Navy decision to continue with both designs. The incorporation of lessons learned from the design, construction, and testing of the initial two ships, as well as introduction of improved waterjets and a waterjet tunnel extension on the LM LCS design comprises the Flight 0+ baseline awarded in FY09. A new baseline will be implemented for both designs in the FY10-15 Block Buy.

**E. Performance Metrics**

The LCS Program achieved Milestone A and Program Initiation in May 2004, and underwent a Milestone A update in FY09. Milestone B is planned for the February 2011.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LCS Ship 1 Construction	C/CPAF	Lockheed Martin:Moorestown, NJ	521.000	-		-		-		-	0.000	521.000	521.000
LCS Ship 1 Change Orders	C/CPAF	Lockheed Martin:Moorestown, NJ	0.500	-		-		-		-	0.000	0.500	0.500
LCS Ship 1 GFE	C/CPAF	Lockheed Martin:Moorestown, NJ	12.000	-		-		-		-	0.000	12.000	12.000
LCS Ship 2 Construction	C/CPAF	General Dynamics:Bath, ME	635.000	-		-		-		-	0.000	635.000	625.000
LCS Ship 2 Change Orders	C/CPAF	General Dynamics:Bath, ME	3.500	-		-		-		-	0.000	3.500	3.500
LCS Ship 2 GFE	C/CPAF	General Dynamics:Bath, ME	7.000	-		-		-		-	0.000	7.000	7.000
LCS Ship 1 FSD/MSSIT	C/CPAF	Lockheed Martin:Moorestown, NJ	25.000	-		-		-		-	0.000	25.000	25.000
LCS Ship 2 FSD/MSSIT	C/CPAF	General Dynamics:Bath, ME	54.000	-		-		-		-	0.000	54.000	54.000
Initial Outfitting/Logistics	Various	Various:Various	21.601	-		-		-		-	0.000	21.601	21.601
Test and Trials	WR	Various:Various	23.648	8.365	Oct 2010	8.412	Oct 2011	-		8.412	0.000	40.425	
Post Delivery ECP	C/CPAF	Lockheed Martin - General Dynamics:Various	29.357	17.600	Oct 2010	0.500	Oct 2011	-		0.500	0.000	47.457	57.457
PSA/PSA Planning/INSURV/OPTAR	WR	Various:Various	32.731	15.600	Oct 2010	36.000	Oct 2011	-		36.000	0.000	84.331	
<b>Subtotal</b>			1,365.337	41.565		44.912		-		44.912	0.000	1,451.814	

**Remarks**  
Final Ship Design/Mission Ship System Integration Team costs for LCS 1 and LCS 2 are not true construction costs, and although funds were obligated against the 4018 construction project contracts, these costs were associated with MSSIT/FSD for design completion.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>				
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
Travel	WR	SUPSHIP:Various	0.460	-		-		-		-	0.000	0.460		
Other Program Costs	WR	Various:Various	11.000	-		-		-		-	0.000	11.000		
<b>Subtotal</b>			11.460	-		-		-		-	0.000	11.460		

**Remarks**  
Program Other Costs for USS FREEDOM and USS INDEPENDENCE

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>				
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
Acquisition Workforce	Various	Various:Various	0.221	-		-		-		-	0.000	0.221		
<b>Subtotal</b>			0.221	-		-		-		-	0.000	0.221		

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		1,377.018	41.565		44.912	-		44.912	0.000	1,463.495	

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

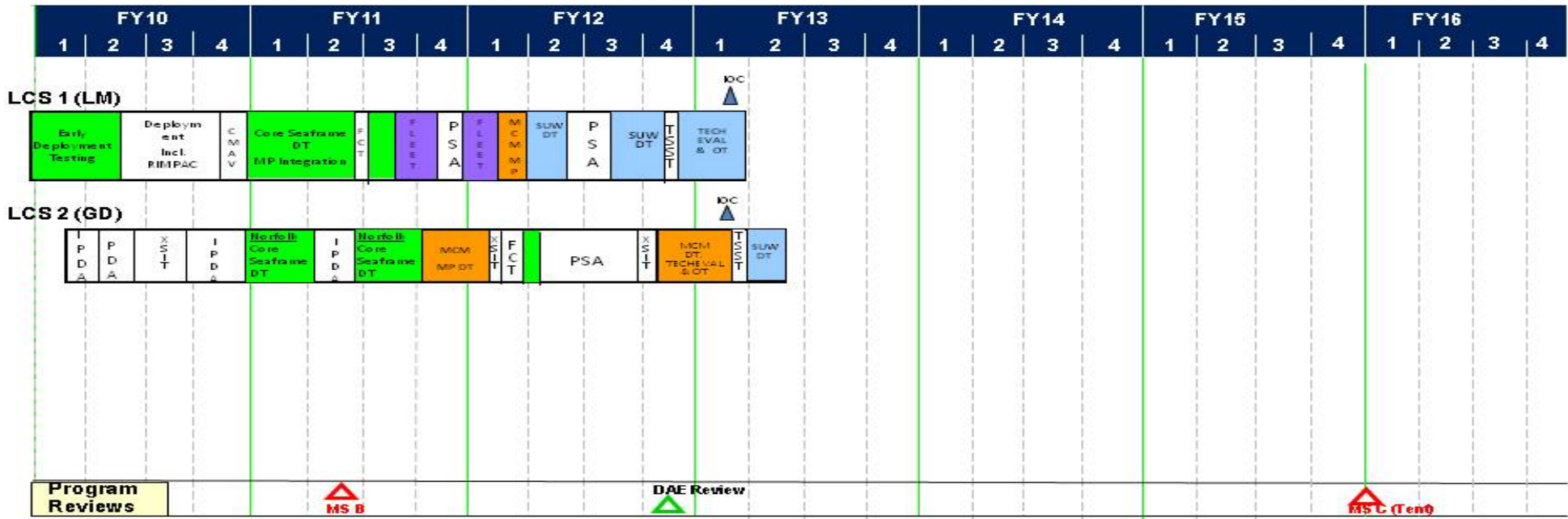
1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0603581N: Littoral Combat Ship (LCS)

**PROJECT**

4018: Littoral Combat Ship Construction



Acronyms			
LCS: Littoral Combat Ship	DAE: Defense Acquisition Executive	DT: Developmental Testing	SF: Seaframe
LM: Lockheed Martin	ASW: Anti-Submarine Warfare	IOT&E: Initial Operational Test & Evaluation	FCT: Final Contract Trials
GD: General Dynamics	MCM: Mine Countermeasure	FOC: Full Operational Capability	OT: Operational Test
PDT&T: Post Delivery Trials & Tests	SUW: Surface Warfare	IPDA: Industrial Post-Delivery Availability	
RIMPAC: Rim of the Pacific Exercise	MP: Mission Package	PSA: Post Shakedown Availability	

**Notes:**  
 \* The Navy has determined that a classified capability will be incorporated into future ASW Mission Packages. This capability will address identified ASW MP requirements.  
 \*\* MP IOC: Currently, IOC for both the MCM and SUW MPs is planned to occur in FY13 when: 1) IOT&E is complete; 2) infrastructure, logistics and a trained crew and support are available; and 3) the first ship with an embarked MCM/SUW MP is a deployable asset assigned to an Operational Commander.

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 4018: <i>Littoral Combat Ship Construction</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4018</b>				
Milestone B	2	2011	2	2011
LCS 2 Delivery (Flight 0)	1	2010	1	2010
IPDA LCS 2	1	2010	2	2011
PSA LCS 1	3	2011	3	2012
Transit (XSIT) 1 (Fleet Cost)	1	2012	1	2012
Final Contract Trials	1	2012	1	2012
PSA LCS 2	2	2012	3	2012
Transit (XSIT) 2 (Fleet Cost)	3	2012	4	2012

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	63.734	-	-	-	-	-	-	-	-	0.000	63.734
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides resources to support both LCS Mission Package Development and Ship Construction.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Revised Acquisition Strategy	59.751	-
<b>FY 2010 Accomplishments:</b> Design review to include all existing change pages. Design update will include new FY10 block buy baseline changes, both government and contract initiated or in response to technology obsolescence, update and completion of a neutral format 3-D model. Update of all design documentation into an LCS Technical Data Package (TDP).  Conduct a continuous independent review and approval by a Navy-led team to ensure LCS TDP is "industry neutral" so that any industry team can build the LCS, including reviews by other contractor/industry teams and special studies for affordability, commonality, and producibility.  Develop a detailed Interface Control Document (ICD) between the Selected Ship Systems (S3), which is predominately Combat and C4I systems and networks, and the seaframe to enable the seaframe and S3 to be independently procured.  Update of industry TDP as necessary from baseline to enable use with FY12 block buy from a second industry source, with S3 provided as GFE.		
<b>Congressional Add:</b> MIW Modules Prog - Cong	3.983	-
<b>FY 2010 Accomplishments:</b> Funding is provided to research and study methods to employ mine warfare mission modules independently of the LCS platform.		
<b>Congressional Adds Subtotals</b>	63.734	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603581N: <i>Littoral Combat Ship (LCS)</i>	9999: <i>Congressional Adds</i>

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Adds.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.822	24.344	34.157	-	34.157	33.517	33.135	29.961	30.809	Continuing	Continuing
0164: <i>Combat System Integration</i>	20.822	24.344	23.493	-	23.493	22.663	22.133	20.905	21.110	Continuing	Continuing
2865: <i>WIDEBAND OPTICALLY MUTIPLXED BEAMFORMING ARCH</i>	-	-	0.001	-	0.001	-	-	-	-	0.000	0.001
3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>	-	-	0.593	-	0.593	0.596	0.595	0.597	1.093	Continuing	Continuing
9B88: <i>Automated Test and Re-Test</i>	-	-	10.070	-	10.070	10.258	10.407	8.459	8.606	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

COMNAVSEASYSYSCOM (SEA 05H) is assigned central Navy responsibility for interoperability, directing the development of policy and architecture for Strike Force (SF) warfare systems engineering and implementation of a common warfare systems engineering process. Furthermore, SEA 05H provides top level direction and execution for certification and assessments which support capability and quality for ships and submarines. SEA 05H has developed processes and tools including the establishment of a force-level warfare systems engineering process, stewardship of the introduction of Combat Systems, Command, Control, Computers, Communications and Intelligence (C5I) modernization and improvement into the Fleet Response Plan (FRP), Command & Control, Communications, Computers, & Combat Systems Integration Modernization Process (C5IMP), configuration management and certification processes, and force-level interoperability assessments using the Distributed Engineering Plant (DEP) land-based testing tool. This project funds the core elements required to conduct Test Bed Validation (TBV) and Warfare Systems Integration and Interoperability Testing (WSI2T) in accordance with the Naval Warfare Systems Certification Policy (NWSCP), Joint NAVSEA, NAVAIR, and SPAWAR SYSCOM Instruction.

**Project 0164: Combat System Integration:**

This project funds SF configuration management through the FRP shore based testing and WSI2T certification of operational computer systems in a test environment similar to their ultimate shipboard operational environment, and interoperability assessments (IA) which are a prerequisite for operational certification of the ships in SF configurations prior to deployment. Force certification of deploying ships in SF configurations is accomplished through the utilization of the Navy's DEP, which provides operational configurations for all naval combat systems located at multiple Navy land-based sites located across the country and connected via networking technology. The DEP provides the only opportunity for comprehensive interoperability testing of combat system and C5I configuration items prior to shipboard delivery for operational use in surface combatant platforms and strike group units. It is a U.S. Fleet Forces Command requirement that all SFs undergo IA testing in the DEP prior to deployment. Further, the DEP provides the mechanism to support the Navy's participation in the Joint testing environments as well as the coalition forces through the Combined Forces Battle Laboratories (CFBL) network to allow for assessments of both Joint and Coalition interoperability. Program focus is on new systems and platforms under development.

**Project 3312: Maritime Theater Missile Defense (MTMD):**

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>
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This project funds participation in the MTMD forum to promote interoperability with participating coalition nations. This project funds participation in the Modeling and Simulation (M&S), Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I), and Coalition Distributed Engineering Plant (CDEP) working groups.

MTMD forum provides protection against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the creation of an interoperable sea-based defense capability among coalition nations. Provide protection across the full spectrum of these threats and utilize existing interoperable sea-based systems to protect against current threats while progressively improving and developing systems and system-of-systems to enable evolving threats to be effectively countered.

MTMD supports these eight working groups:

- (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) activities define and develop architectures.
- (2) Modeling & Simulation (M&S) performs legacy and future systems simulation testing.
- (3) Coalition Distributed Engineering Plant (CDEP) performs Hardware-in-the-Loop Testing.
- (4) Open Architecture (OA) develops Interface Standards and Data Models.
- (5) Test Planning and Execution (TPEX) develops Test Plans and oversees exercise and post event data analysis.
- (6) Develops the Forum CONOPS and identifies the operational constraints and tactical constructs surrounding MTMD activities.
- (7) Coalition Supersonic Sea-Skimming Targets (CSSST) evaluating the conversion of excess TERRIER Missiles into low cost targets.
- (8) Next Generation Infrared Search and Track (IRST) is evaluating the technologies of the participating nations to develop passive staring IRST sensor system.

Project 9B88: Automated Test and Retest (ATRT):

The Navy, through Automated Test and Re-Test (ATRT) is developing an automated test/analysis capability, which is applicable at phases within system development which provides reproducible and quantitative evaluation of system performance in order to support one of the Navy's priority initiatives of reduction of Total Ownership Cost (TOC). Funding will provide additional work towards ongoing testing and analysis efforts within the AEGIS Combat System Advanced Capability Build (ACB) 12, the Littoral Combat Ship (LCS) Mission Module development, the Ship Self Defense System (SSDS), AN/BYG-1 Submarine Combat System, and other major acquisitions.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	22.444	24.344	26.181	-	26.181
Current President's Budget	20.822	24.344	34.157	-	34.157
Total Adjustments	-1.622	-	7.976	-	7.976
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.000	-			
• SBIR/STTR Transfer	-0.014	-			
• Program Adjustments	-	-	8.627	-	8.627
• Section 219 Reprogramming	-0.600	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.651	-	-0.651
• Congressional General Reductions Adjustments	-0.008	-	-	-	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0164: <i>Combat System Integration</i>	20.822	24.344	23.493	-	23.493	22.663	22.133	20.905	21.110	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project 0164: Combat System Integration: COMNAVSEASYSYSCOM (SEA 05H) is assigned central Navy responsibility for interoperability, directing the development of policy and architecture for Strike Force (SF) warfare systems engineering and implementation of a common warfare systems engineering process. Furthermore, SEA 05H provides top level direction and execution for certification and assessments which support capability and quality for ships and submarines. SEA 05H has developed processes and tools including the establishment of a force-level warfare systems engineering process, stewardship of the introduction of Combat Systems, Command, Control, Computers, Communications and Intelligence (C5I) modernization and improvement into the Fleet Response Plan (FRP), Command & Control, Communications, Computers, & Combat Systems Integration Modernization Process (C5IMP), configuration management and certification processes, and force-level interoperability assessments using the Distributed Engineering Plant (DEP) land-based testing tool. This project funds the core elements required to conduct Test Bed Validation (TBV) and Warfare Systems Integration and Interoperability Testing (WSI2T) in accordance with the Naval Warfare Systems Certification Policy (NWSCP), Joint NAVSEA, NAVAIR, and SPAWAR SYSCOM Instruction.

This project funds SF configuration management through the FRP shore based testing and WSI2T certification of operational computer systems in a test environment similar to their ultimate shipboard operational environment, and interoperability assessments (IA) which are a prerequisite for operational certification of the ships in SF configurations prior to their deployment. Force certification of deploying ships in SF configurations is accomplished through the utilization of the Navy's DEP, which provides operational configurations for all naval combat systems located at multiple Navy land-based sites located across the country and connected via networking technology.

The DEP provides the only opportunity for comprehensive interoperability testing of combat system and C5I configuration items prior to shipboard delivery for operational use in surface combatant platforms and strike group units. It is a U.S. Fleet Forces Command requirement that all SFs undergo interoperability assessment testing in the DEP prior to deployment. Further, the DEP provides the mechanism to support the Navy's participation in the joint testing environments as well as the coalition forces through the Combined Forces Battle Laboratories (CFBL) network to allow for assessments of both Joint and Coalition interoperability. Program focus is on new systems, platforms under development.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Platform/Strike Force Certification	11.000	12.117	10.321
<b>Articles:</b>	0	0	0
<b>Description:</b> This program conducts Interoperability Assessments (IA) that are required to certify Aircraft Carriers, Amphibious Assault Ships, and Surface Combatants in accordance with the Naval Warfare System Certification Policy (NWSCP), NAVSEAINST 9410.2, NAVAIR 5230.20, SPAWAR 5234.1 and U.S. Fleet Forces Command instruction 4720.3B. Using the			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>		<b>PROJECT</b> 0164: <i>Combat System Integration</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
Distribution Engineering Plant (DEP), this effort provides the Navy's only means to test Strike Force combat systems and associated Command, Control, Communications, Computers, and Intelligence (C4I) prior to deployment.				
<b>FY 2010 Accomplishments:</b> Conducted IAs for 13 certification decisions involving the delivery of Aegis Combat System Advance Capability Builder 08 (ACB08) and AWS 7.1.R to Navy Cruisers and Destroyers. Results from this testing formed the basis for operator guidance and procedures in the form of Tactics, Techniques and Procedures (TTPs), Capabilities and Limitations (C&Ls), and instructional materials.				
<b>FY 2011 Plans:</b> Conduct IAs for 26 certification decisions involving Aircraft Carriers, Amphibious Assault Ships and Surface Combatants. In addition to crew support materials, this testing is required to enable early identification of critical interoperability issues involving the Cooperative Engagement Capability (CEC) and LINK 16. This affords the systems engineering community the opportunity to impose software corrections and address design deficiencies prior to fleet delivery.				
<b>FY 2012 Plans:</b> Support 30 certification events, and will validate corrections of CEC/LINK 16 deficiencies prior to their installation in CGs and DDGs. Platform Certification Decision (PCDs) will involve CVN 78, CGs, DDGs, and amphibious assault ships.				
<b>Title:</b> Fleet Response Plan (FRP)				4.000
				0
				4.875
				0
				7.186
				0
<b>Description:</b> This program is required to support the fleet C5I Modernization Policy, per Command Fleet Focus Command (CFFC) 4720.3B, providing upfront systems engineering, configuration management, waterfront training and support for the entire surface Navy.				
<b>FY 2010 Accomplishments:</b> The Program funded 6 Strike Force Interoperability Officers (SFIOs) who support 11 Carrier Strike Groups (CSGs) and 9 Amphibious Ready Groups (ARGs) throughout the inter-deployment cycle including successful deployment of 4 CSGs and 4 ARGs. Generated and delivered Strike Group documentation in the form of Interoperability Capabilities and Limitations (C&L) and Tactical Training Aids (TIC TECHAID). TIC TECHAIDs have been delivered for 58 SG ships, 71 independent ships and 4 Land Based Sites. The C&L program currently maintains known interoperability issues for 41 Strike Groups comprised of 237 ships in operationally relevant terms that sailors can employ. The C&L project is an integral part of the toolset and the defacto playbook Joint Interface Control Officers (JICOs) use worldwide to conduct effective Tactical Data Link planning, operations and				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>data exchanges across the fleet. This support is critical given known shortfalls in training resources and is necessary to ensure proficiencies of sailors operating newly upgraded system capabilities.</p> <p><b>FY 2011 Plans:</b> Provide waterfront support for all CSGs and ARGs throughout the inter-deployment cycle, including preparations for deployment of 6 CSGs, 3 ARGs and about 40 independent deployers during FY11. Facilitate completion of C5I installations during approximately 100 Chief of Naval Operation (CNO) availabilities in FY 11. Provide C&amp;L documents for 65 Strike Groups and 110 Naval Air Squadrons (covering F/A-18s, E-2Cs, MH-60s, EA-6Bs and P-3s). TIC TECHAIDs will be delivered for 70 SG ships and 100 independent ships.</p> <p><b>FY 2012 Plans:</b> Provide waterfront support for all CSGs and ARGs throughout the inter-deployment cycle, including preparations for deployment of 6 CSGs, 4 ARGs and about 35 independent deployers during FY12. Facilitate completion of C5I installations during approximately 100 CNO availabilities in FY 12. Provide C&amp;L documents for 65 Strike Groups comprised of 237 ships and 110 Naval Air Squadrons (covering F/A-18s, E-2Cs, MH-60s, EA-6Bs and P-3s). TIC TECHAIDs will be delivered for 70 SG ships, 100 independent deploying ships and 4 Land Based Sites.</p>				
<p><b>Title:</b> Combat Systems Certification Support of Platform Certification</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This program funds Land-based Test Sites to conduct integration testing of Combat Systems for purposes of characterizing, certifying and deploying Combat Systems on Carriers and Large Deck Amphibious naval platforms.</p> <p><b>FY 2010 Accomplishments:</b> Tested Combat System baselines for LHD 3, LHD 4, CVN 69, CVN 73, CVN 74, CVN 76, LSD 41/49, LPD 17-18, providing early identification, correction and characterization of combat system integration issues prior to installation and certification for deployment. Ships will field uncertified combat and Command, Control, Communications, Computers, &amp; Intelligence (C4I) systems with major incompatibilities, and incur mission critical errors in radars, command and control and weapon systems that will jeopardize ships ability to provide air defense against known threats to Strike Groups. Testing to date has identified over 115 high severity issues against these Combat Systems baselines that if not resolved would have prevented accomplishment of critical mission capabilities. CVN 75 and LPD 19-20 Integration Testing is scheduled for the remainder of FY 10.</p> <p><b>FY 2011 Plans:</b> Program plans to conduct integration and interoperability testing for one major platform, CVN 75.</p> <p><b>FY 2012 Plans:</b></p>		2.000 0	2.440 0	1.618 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Program plans to conduct integration and interoperability testing for two major platforms, LHD 8 and CVN 69 Combat Systems.				
<b>Title:</b> Navigation System Certification (NAVCERT)		1.500	1.500	0.808
<b>Articles:</b>		0	0	0
<b>Description:</b> NAVSEAINST 9420.4 dated May 02 requires that a Navigation System Certification (NAVCERT) be performed for all initial installation/new construction, major overhaul/medication/repair when it is determined to impact the accuracy of navigation data, changes to the navigation baseline configuration, or elapsed time of more than five (5) years since previous NAVCERT. A NAVCERT certifies to NAVSEA, Ship Program Managers (SPMs), Type Commanders (TYCOMs), and the Fleet that shipboard navigation systems are: properly installed and in good physical condition, operating to specified accuracy and requirements.				
<b>FY 2010 Accomplishments:</b> Completed 62 NAVCERTs through 27 May 2010. Plan to complete a total of 72 NAVCERTs by the end of FY 2010. These include cruisers, destroyers, carriers, Amphibious, and submarines. A successful NAVCERT is required for Platform Certification Decisions (PCDs), TOMAHAWK Weapons System (TTWCS) certifications, Precision Approach Landing Systems certifications (PALS) Certifications, and Electronic Charting and Display System-Navy (ECDIS-N) Authorization.				
<b>FY 2011 Plans:</b> Plans are to perform 68 NAVCERTs on cruisers, destroyers, carriers, Amphibious, and submarines and will update NAVSEA Instruction 9420.4A to incorporate fleet input and lessons learned in FY2010. A successful NAVCERT is required for Platform Certification Decisions (PCDs), TOMAHAWK Weapons System (TTWCS) certifications, Precision Approach Landing Systems certifications (PALS) Certifications, and Electronic Charting and Display System-Navy (ECDIS-N) Authorization.				
<b>FY 2012 Plans:</b> Plans are to perform 63 NAVCERTs on cruisers, destroyers, carriers, Amphibious, and submarines. A successful NAVCERT is required for Platform Certification Decisions (PCDs), TOMAHAWK Weapons System (TTWCS) certifications, Precision Approach Landing Systems certifications (PALS) Certifications, and Electronic Charting and Display System-Navy (ECDIS-N) Authorization.				
<b>Title:</b> DEP Engineering and Operations		2.322	3.412	3.560
<b>Articles:</b>		0	0	0
<b>Description:</b> Distributed Engineering Plant (DEP) Engineering and Operations performs systems engineering, and operations functions to ensure DEP infrastructure supports testing of combat system baselines. The program conducts systems engineering to identify simulation/stimulation requirements necessary to achieve required fidelity for DEP testing at Navy laboratory sites through Verification, Validation and Accreditation (VV&A).				
<b>FY 2010 Accomplishments:</b>				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Ship Self Defense System (SSDS) IA (05.09) included Joint Range Extension Application Protocol (JREAP) testing as part of the event. It was successfully executed in February of 2010. System Engineering Event (SEE) 10-1 Identification (ID) Management, a test conducted for the Cooperative Engagement Capability (CEC) program office, successfully proved four potential CEC corrections to improve Strike Force Interoperability. Data was successfully collected and the CEC program office applied the results for incorporation to their baseline update. Verification, Validation &amp; Accreditation (VV&amp;A) 10-1 for Mode V/S simulation assessments in the plant was executed in January 2010. Purpose was to assess the incorporation of the Mode V simulation capability in Aegis Simulation, Test and Training System (ASTATS) and Wrap Around Simulation Program (WASP) to ensure Institute of Electrical &amp; Electronics Engineer (IEEE) standards. Two SEE events 10-2 Ship Gridlock System (SGS) and 10-3 (Fleet Requirements) testing will be conducted in July through August timeframe prior to the Secure Defense Research and Engineering Network (SDREN) transition which will be followed by two VV&amp;A events for lab node network checkout. A second Interoperability Assessments (IA) (SSDS 08.06.01) was originally scheduled for August FY10 but has been moved to the right into FY11 due to availability of the baseline for testing.</p> <p><b>FY 2011 Plans:</b> Program plans to conduct one Interoperability Assessments (IA): (SSDS O8.06.X) along with two(2) System Engineering Events (SEEs) in order to facilitate development testing for Aegis ACB 12 and validation of Surface Warfare Development Group Tactics, Techniques, and Procedures for deploying Carrier Strike Groups. Plan is to conduct improvements and updates to the DEP plant via two (2) Verification, Validation, and Accreditation (VV&amp;A) events: Gateway Terminal Emulator/Common Connectivity Device/ Distributed Interactive Simulation(GTE/CCD/DIS) updates and associated VV&amp;A to support U.S. and coalition requirements.</p> <p><b>FY 2012 Plans:</b> Program plans to support three (3) IAs as determined by Interoperability Certification Committee (ICC) and three (3) SEEs in support of CVN-78 and Joint Interoperability in support of combat system developmental testing and validation of Fleet operational and training requirements.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	20.822	24.344	23.493

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN 2960: (ICSTD/DEP): <i>Integrated Combat System Test</i>	4.409	4.445	4.441	0.000	4.441	4.501	4.551	4.616	4.695	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<i>Division/Distributed Engineering Plant</i>											

**D. Acquisition Strategy**

RD TEN funding under this line supports independent certification of the integration of major capability upgrades acquired by Program Executive Offices (PEOs) into host Navy Platforms and Strike Forces. The RD TEN engineering and certification activities at field sites do not involve direct procurement of equipment or engineering services, and hence no acquisition strategy is required. The major capability upgrades evaluated under this program fall under their associated PEOs' acquisition strategies.

**E. Performance Metrics**

Program Review

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
SF Requirements Engineering & Analysis	WR	NSWC:DN/PHD/Corona	5.157	-		-		-		-	0.000	5.157	
SF Requirements Engineering & Analysis	WR	Non-NSWCs:Various	5.295	-		-		-		-	0.000	5.295	
Platform/Strike Force Certification	WR	NSWC:DD/ICSTD/DN/Corona	33.332	6.400	Nov 2010	4.700	Dec 2011	-		4.700	Continuing	Continuing	Continuing
Platform/Strike Force Certification	WR	Non-NSWCs:Various	23.432	4.411	Dec 2010	4.000	Dec 2011	-		4.000	Continuing	Continuing	Continuing
Fleet Response Plan (FRP)	WR	NSWC:DD/PHD/DN	24.050	2.980	Nov 2010	6.215	Dec 2011	-		6.215	Continuing	Continuing	Continuing
Fleet Response Plan (FRP)	WR	Non-NSWCs:Various	2.793	1.000	Dec 2010	0.350	Dec 2011	-		0.350	Continuing	Continuing	Continuing
Combat Systems Cert ISO Platform Cert	WR	NSWC:DN/DD/PHD/Corona	22.200	2.440	Jan 2011	1.570	Jan 2012	-		1.570	Continuing	Continuing	Continuing
Combat Systems Cert ISO Platform Cert	WR	Non-NSWCs:Various	1.853	-		-		-		-	0.000	1.853	
Navigation System Certification	WR	SPAWAR:Charleston	2.964	1.500	Jan 2011	0.808	Jan 2012	-		0.808	Continuing	Continuing	Continuing
DEP Engineering and Operations	WR	NSWC:DD/SPAWAR/San Diego/SCSC/Wallops	15.629	1.500	Apr 2011	1.500	Apr 2012	-		1.500	Continuing	Continuing	Continuing
DEP Engineering and Operations	WR	Non-NSWCs:Various	11.410	1.213	May 2011	1.000	May 2012	-		1.000	Continuing	Continuing	Continuing
CNI/Design Agent	SS/CPAF	General Dynamics:Not Specified	47.926	-		-		-		-	0.000	47.926	
CNI/Software Engineering	WR	NSWC:Dahlgren	8.383	-		-		-		-	0.000	8.383	
CNI/Test and Evaluation	WR	CDSA:Not Specified	3.922	-		-		-		-	0.000	3.922	
CNI/Systems Engineering	WR	NSWC:PHD	2.645	-		-		-		-	0.000	2.645	
CNI/Miscellaneous	WR	Various:Various	7.529	-		-		-		-	0.000	7.529	
OA Automated Test and Retest	WR	NSWCs:Various	17.500	-		-		-		-	0.000	17.500	
Contract Engineering Support	C/CPFF	Gryphon Technology:VA	11.159	1.100	Dec 2010	1.700	Dec 2011	-		1.700	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Program Management Support	C/CPFF	Delta Resources Inc.:VA	6.641	1.500	Dec 2010	1.350	Dec 2011	-		1.350	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA HQ:Washington, DC	1.290	0.300	Sep 2011	0.300	Sep 2012	-		0.300	Continuing	Continuing	Continuing
Interoperability Fixes	WR	NSWCs:Various	1.500	-		-		-		-	0.000	1.500	
<b>Subtotal</b>			256.610	24.344		23.493		-		23.493			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWDF	Various	Not Specified:Not Specified	0.311	-		-		-		-	0.000	0.311	
<b>Subtotal</b>			0.311	-		-		-		-	0.000	0.311	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			256.921	24.344		23.493		-		23.493			

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 0164</b>																												
AEGIS BMD 3.6.1 X 08 Test Event	■																											
AEGIS ACB 08 Test Event	■																											
AEGIS BMD 4.0.1 FTX-06 @NSWC/DD	■																											
AEGIS BMD 4.0.1 MEIT (CSEDS) ETE (CSEDS) @NSWC/DD	■	■	■	■																								
CVN 69 CLDMS 3,6 WSI2T/Final S&E Test	■																											
LPD 17 IOP Dev/Cert Test @ ICSTF	■																											
LPD 21 TBV/WSI2T @ ICSTF	■																											
LHD 4 WSI2T @ ICSTF	■																											
LSD 41 TBV/WSI2T (SLQ.32 V B1) (B2)1.1.1.1) @ Wallops Island	■																											
LSD 49 TBV/WSI2T (SLQ.32 B B1A1.13.2) @ Wallops Island	■																											
LHD 4 TBV/WSI2T (GCCCS-M 4.0.3/USQ-172(V)1) USQ)@ ICSTF	■																											
LPD 20 TBV/WSI2T @ ICSTF	■																											
CVN 74 TBV/WSI2T @ ICSTF	■	■	■	■																								
CVN 74 IOP Dev Test 6.05.09 @ ICSTF	■	■	■	■																								
LCS 1 IOP Test (AD-5)	■	■	■	■																								
AEGIS Integrated Testing (81) @NSWC/DD	■	■	■	■																								
LHD 4 TBV/WSI2T (GCCCS-M 4.0.3/USQ-172(V)1) @ ICSTF		■																										
CVN 73TBV/WSI2T @ ICSTF		■																										



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
CVN 76 CDLMS 3.4 Fallback Test @ Wallops Island																												
CVN 69 TBV/WSI2T Phase I @ Wallops Isl (WI)		■	■																									
CVN 68 TBV/WSI2T Phase II @ Wallops Island (WI)			■																									
LHD 3 TBV/WSI2T @ ICSTF			■																									
CVN 75 TBV/WSI2T Phase III @ Wallops Island (WI)		■	■	■																								
CVN 71TBV @ Wallops Island					■																							
LHD 8 TBV/WSI2T @ NSWC/DD								■	■	■																		
AEGIS ACB12 Integrated Testing DEMO #1 @NSWC/DD								■																				
CVN 69 TBV/WSI2T Notional @ Wallops Island (WI)										■	■																	
AEGIS ACB12 Integrated Testing DEMO #2 @NSWC/DD													■															
CVN 78 TBV/WSI2T 1 @ Wallops Island																												
LPD 19 IOP Dev/Cert Test @ ICSTF																												
CVN 78 IOP Dev Test 1 @ Wallops Island																												
CVN 78 IOP Dev Test 2 @ Wallops Island																												
LPD 18 IOP Dev/Cert Test @ ICSTF																												
CVN 78 TBV/WSI2T 2 @ Wallops Island																												
AEGIS BMD 4.01 FTX-16@NSWC/DD							■																					
AEGIS BMD 4.01 FTX-16 WIT@NSWC/DD							■																					

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0164</b>				
AEGIS BMD 3.6.1 X 08 Test Event	1	2010	1	2010
AEGIS ACB 08 Test Event	1	2010	1	2010
AEGIS BMD 4.0.1 FTX-06 @NSWC/DD	1	2010	1	2010
AEGIS BMD 4.0.1 MEIT (CSEDS) ETE (CSEDS) @NSWC/DD	1	2010	3	2010
CVN 69 CLDMS 3,6 WSI2T/Final S&E Test	1	2010	1	2010
LPD 17 IOP Dev/Cert Test @ ICSTF	1	2010	1	2010
LPD 21 TBV/WSI2T @ ICSTF	1	2010	1	2010
LHD 4 WSI2T @ ICSTF	1	2010	1	2010
LSD 41 TBV/WSI2T (SLQ.32 V B1) (B2)1.1.1.1) @ Wallops Island	1	2010	1	2010
LSD 49 TBV/WSI2T (SLQ.32 B B1A1.13.2) @ Wallops Island	1	2010	1	2010
LHD 4 TBV/WSI2T (GCCCS-M 4.0.3/USQ-172(V)1) USQ)@ ICSTF	1	2010	1	2010
LPD 20 TBV/WSI2T @ ICSTF	1	2010	1	2010
CVN 74 TBV/WSI2T @ ICSTF	1	2010	2	2010
CVN 74 IOP Dev Test 6.05.09 @ ICSTF	1	2010	2	2010
LCS 1 IOP Test (AD-5)	1	2010	2	2010
AEGIS Integrated Testing (81) @NSWC/DD	1	2010	2	2010
LHD 4 TBV/WSI2T (GCCCS-M 4.0.3/USQ-172(V)1) @ ICSTF	2	2010	2	2010
CVN 73TBV/WSI2T @ ICSTF	2	2010	2	2010
CVN 76 CDLMS 3.4 Fallback Test @ Wallops Island	2	2010	2	2010
CVN 69 TBV/WSI2T Phase I @ Wallops Isl (WI)	2	2010	3	2010
CVN 68 TBV/WSI2T Phase II @ Wallops Island (WI)	3	2010	3	2010

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 0164: <i>Combat System Integration</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
LHD 3 TBV/WSI2T @ ICSTF	3	2010	3	2010
CVN 75 TBV/WSI2T Phase III @ Wallops Island (WI)	3	2010	4	2011
CVN 71TBV @ Wallops Island	2	2011	2	2011
LHD 8 TBV/WSI2T @ NSWC/DD	1	2012	3	2012
AEGIS ACB12 Integrated Testing DEMO #1 @NSWC/DD	4	2011	4	2011
CVN 69 TBV/WSI2T Notional @ Wallops Island (WI)	3	2012	4	2012
AEGIS ACB12 Integrated Testing DEMO #2 @NSWC/DD	1	2013	1	2013
CVN 78 TBV/WSI2T 1 @ Wallops Island	1	2015	4	2016
LPD 19 IOP Dev/Cert Test @ ICSTF	1	2015	1	2015
CVN 78 IOP Dev Test 1 @ Wallops Island	1	2015	1	2015
CVN 78 IOP Dev Test 2 @ Wallops Island	1	2015	1	2015
LPD 18 IOP Dev/Cert Test @ ICSTF	1	2015	1	2015
CVN 78 TBV/WSI2T 2 @ Wallops Island	1	2015	1	2015
AEGIS BMD 4.01 FTX-16@NSWC/DD	1	2011	1	2011
AEGIS BMD 4.01 FTX-16 WIT@NSWC/DD	2	2011	2	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 2865: <i>WIDEBAND OPTICALLY MUTIPLIED BEAMFORMING ARCH</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2865: <i>WIDEBAND OPTICALLY MUTIPLIED BEAMFORMING ARCH</i>	-	-	0.001	-	0.001	-	-	-	-	0.000	0.001
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

These funds will be executed within Project 0164.

**A. Mission Description and Budget Item Justification**

N/A

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> New Accomplishment/Planned Program Entry	-	-	0.001
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	0.001

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>	-	-	0.593	-	0.593	0.596	0.595	0.597	1.093	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project funds participation in the Maritime Theater Missile Defense (MTMD) forum to promote interoperability with participating coalition nations. This project funds participation in the Modeling and Simulation (M&S), Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I), and Coalition Distributed Engineering Plant (CDEP) working groups.

MTMD forum provides protection against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the creation of an interoperable sea-based defense capability among coalition nations. Provide protection across the full spectrum of these threats and utilize existing interoperable sea-based systems to protect against current threats while progressively improving and developing systems and system-of- systems to enable evolving threats to be effectively countered.

MTMD supports these eight working groups:

- (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) activities define and develop architectures.
- (2) Modeling & Simulation (M&S) performs legacy and future systems simulation testing.
- (3) Coalition Distributed Engineering Plant (CDEP) performs Hardware-in-the-Loop Testing.
- (4) Open Architecture (OA) develops Interface Standards and Data Models.
- (5) Test Planning and Execution (TPEX) develops Test Plans and oversees exercise and post event data analysis.
- (6) Develops the Forum CONOPS and identifies the operational constraints and tactical constructs surrounding MTMD activities.
- (7) Coalition Supersonic Sea-Skimming Targets (CSSST) evaluating the conversion of excess TERRIER Missiles into low cost targets.
- (8) Next Generation Infrared Search and Track (IRST) is evaluating the technologies of the participating nations to develop passive staring IRST sensor system.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Maritime Theater Missile Defense Forum (MTMD)	-	-	0.593
<b>Articles:</b>			0
<b>Description:</b> This project funds participation in the MTMD forum to promote interoperability with participating coalition nations. This project funds participation in the Modeling and Simulation (M&S), Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I), and Coalition Distributed Engineering Plant (CDEP) working groups.			
<b>FY 2012 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>		<b>PROJECT</b> 3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
To participate in the Modeling and Simulation (M&S), Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I), and Coalition Distributed Engineering Plant (CDEP) working groups.					
<b>Accomplishments/Planned Programs Subtotals</b>			-	-	0.593
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A					
<b>D. Acquisition Strategy</b> N/A					
<b>E. Performance Metrics</b> Program Review					



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 9B88: <i>Automated Test and Re-Test</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9B88: <i>Automated Test and Re-Test</i>	-	-	10.070	-	10.070	10.258	10.407	8.459	8.606	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Navy, through Automated Test and Re-Test (ATRT) is developing an automated test/analysis capability, which is applicable at phases within system development which provides reproducible and quantitative evaluation of system performance in order to support one of the Navy's priority initiatives of reduction of Total Ownership Cost (TOC). Funding will provide additional work towards ongoing testing and analysis efforts within the AEGIS Combat System Advanced Capability Build (ACB) 12, the Littoral Combat Ship (LCS) Mission Module development, the Ship Self Defense System (SSDS), AN/BYG-1 Submarine Combat System, and other major acquisitions. In addition, funding will support work towards the development of standards, specifications, and guidance to facilitate NAVSEA-affiliated programs' adoption of this TOC-reducing discipline and technology.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Automated Test and Re-Test	-	-	10.070
<b>Articles:</b>			0
<b>Description:</b> The Navy, through Automated Test and Re-Test (ATRT) is developing an automated test/analysis capability, which is applicable at phases within system development which provides reproducible and quantitative evaluation of system performance in order to support one of the Navy's priority initiatives of reduction of Total Ownership Cost (TOC). The funding would provide additional work towards ongoing testing and analysis efforts within the AEGIS Combat System Advanced Capability Build (ACB) 12, the Littoral Combat Ship (LCS) Mission Module development, the Ship Self Defense System (SSDS), AN/BYG-1 Submarine Combat System, and other major acquisitions. In addition, funding will also provide work towards the development of standards, specifications, and guidance to facilitate NAVSEA-affiliated programs adoption of this TOC-reducing discipline and technology.			
<b>FY 2012 Plans:</b> Re-establish the Auto Test Re-Test (ATRT) working group for continued development of ATRT requirement specifications. Provide guidance to startup projects for the implementation of the ATRT capability. Develop training modules and lessons learned for ATRT. Conduct outreach efforts to NAVSEA programs and industry for ATRT implementation across ship platforms.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	10.070



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 9B88: <i>Automated Test and Re-Test</i>

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

N/A

**D. Acquisition Strategy**

The Program Strategy for the ATRT program includes the following:

- Investigation of applicable similarities of industry standards, specifications, and architectures that are the relevant to ATRT program to recognize best practice characteristics and participate on Standards Boards
- Development of standards and specifications for ATRT tools/processes
- Funding and execution of ATRT startups within acquisition programs per submission of proposals and Business Case Analyses (BCA)
- Development of training and outreach efforts to promote awareness of automated testing and analysis body of knowledge and available tools/processes
- Setup and maintain an ATRT portal for the collection and dissemination of body of knowledge
- Produce Contract Management and Open Architecture Guidebook for ATRT

**E. Performance Metrics**

Progress towards meeting the objectives of the ATRT efforts will be monitored via the following:

- Progress Briefs at Quarterly ATRT Stakeholders Meetings
- Program Technical Reviews
- Return on Investment Metrics based on work hours for test process execution - before and after automation

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: Combat System Integration	<b>PROJECT</b> 9B88: Automated Test and Re-Test
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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Auto Test & Retest	C/CPFF	Innovative Defense Technologies (IDT):Ballston, VA	-	-		8.909	Dec 2011	-		8.909	Continuing	Continuing	Continuing
Auto Test & Retest	WR	Various NSWGs:Not Specified	-	-		0.861	Dec 2011	-		0.861	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		9.770		-		9.770			

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Auto Test & Retest	C/CPFF	Delta Resources:Crystal City, VA	-	-		0.300	Dec 2011	-		0.300	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		0.300		-		0.300			

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-		10.070		-		10.070			

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 9B88: <i>Automated Test and Re-Test</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 9B88</b>																												
Development of ATRT Reference Model																												
Startup Projects for ATRT Implementation																												
Development of ATRT standards and specifications																												
Participation in Existing Government and Industrial Standards Boards																												
Evaluation of Business Case Analyses (BCA) of potential ATRT investments																												
Development of training and lessons learned for ATRT																												
Development of guidance for contract and requirements language pertaining to ATRT																												
Conduct of outreach efforts to NAVSEA programs and industry																												
ATRT Portal for Body of Knowledge																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603582N: <i>Combat System Integration</i>	<b>PROJECT</b> 9B88: <i>Automated Test and Re-Test</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 9B88</b>				
Development of ATRT Reference Model	1	2012	1	2012
Startup Projects for ATRT Implementation	1	2012	4	2016
Development of ATRT standards and specifications	1	2012	4	2016
Participation in Existing Government and Industrial Standards Boards	1	2012	4	2016
Evaluation of Business Case Analyses (BCA) of potential ATRT investments	1	2012	4	2016
Development of training and lessons learned for ATRT	1	2012	4	2016
Development of guidance for contract and requirements language pertaining to ATRT	1	2012	4	2016
Conduct of outreach efforts to NAVSEA programs and industry	1	2012	4	2016
ATRT Portal for Body of Knowledge	1	2012	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	4.087	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
0363: <i>Insensitive Munitions Adv. Development</i>	3.290	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797

**A. Mission Description and Budget Item Justification**

Insensitive Munitions Advanced Development (IMAD) (Project 0363) - Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet or fragment impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. IMAD is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship and platform survivability and satisfying performance and readiness requirements.

CONGRESSIONAL ADD - Improved Kinetic Energy Cargo Round (Project 10C120) - To design, develop, and demonstrate technologies and components for a kinetic energy payload for a 5-inch round. The Navy I-KEET program projectile features a forward expulsion mechanism to expel a multi-component kinetic energy payload with significantly increased on-target energy and expanded lethality footprint relative to its predecessor. The I-KEET round, considered to be a product-improved version of the MK182 I-KEET for ship self defense and force protection with higher lethality against a broader array of threats at a greater range.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	4.241	5.388	4.988	-	4.988
Current President's Budget	4.087	5.388	4.753	-	4.753
Total Adjustments	-0.154	-	-0.235	-	-0.235
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.118	-			
• Section 219 Reprogramming	-0.035	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.235	-	-0.235
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Improved Kinetic Energy Cargo Round*

	<b>FY 2010</b>	<b>FY 2011</b>
	0.797	-
Congressional Add Subtotals for Project: 9999	0.797	-
Congressional Add Totals for all Projects	0.797	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>				<b>PROJECT</b> 0363: <i>Insensitive Munitions Adv. Development</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0363: <i>Insensitive Munitions Adv. Development</i>	3.290	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. The Insensitive Munitions (IM) Program is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship survivability and satisfying performance and readiness requirements. Each technology area is divided into subtasks addressing specific munition/munition class IM deficiencies. Energetic materials producibility is demonstrated to assure national capability to produce and load munitions systems. The program leverages are being closely coordinated with other Military Departments, North Atlantic Treaty organization (NATO) and allied countries to eliminate redundant efforts and maximize efficiency. A joint service IM requirement has been developed and through the IM Strategic Planning process, all PEO's are implementing IM in their priority munitions. Insensitive munitions are identified as a DoD critical technology requirement and considered as part of a weapon design. The Insensitive Munitions Advanced Development (IMAD) program matures the technology developed by a variety of Science and Technology (S&T) sources for program management integration into weapons systems to meet the IM technical deficiencies documented in the PEO IM Strategic Plans. IMAD provides the link between S&T programs and the PMs by optimizing IM technologies to meet Navy requirements. IMAD offers risk mitigation for the PMs in terms of IM technical knowledge, expertise and manpower with the State of the Art expertise across IM products. Each technology area is divided into subtasks addressing specific munition and munition class IM deficiencies.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Insensitive Munitions Adv. Development	3.290	5.388	4.753
<b>Articles:</b>	0	0	0
<b>Description:</b> Validate and assess weapon systems POA&M's for Insensitive Munitions (IM) compliance. Review Insensitive Munitions Strategic Plan (IMSP) for Navy Compile and analyze weapon system, energetic material and generic technology IM test data. Perform Threat Hazard Assessments (THAs). Perform analysis of Energetic Material properties logistic process. Review IM Certification and Waivers. Support Insensitive Munitions Council (IMC), Insensitive Munitions Coordination Group (IMCG), and IMC Working Group. Support and develop Insensitive Munitions Technology Tool (IMT2). Support North Atlantic Treaty Organization Standardization Agreement (NATO STANAG) and Advanced Operations (AOP) development. Support Insensitive Munitions Advanced Development (IMAD) program briefs. Support all Navy Joint Services Insensitive Munitions Technical Panel (JSIMTP) meetings. Support Explosive Safety Working Group (ESWG) meetings. Provide task management support for financial management, review of programmatic deliverables and overall task coordination.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>	<b>PROJECT</b> 0363: <i>Insensitive Munitions Adv. Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Evaluate and Demonstrate IM gun propulsion systems which provide improved or comparable performance to in-service systems and have improved IM characteristics. Gun propellants are being formulated with less sensitive ingredients to decrease IM response, while still maintaining the energy and performance of the gun system. Less sensitive energetic solids are replacing part of the shock sensitive RDX in these formulations. In addition, less sensitive binder systems are being developed that help by partitioning the energy of the propellant system to help minimize IM response. Initial small-scale testing of a new propellant formulation to extend the range for the conventional 5" gun shows that these formulations are much less sensitive to shock initiation than currently fielded propellants. Cooperative effort with AGS Long Range Land Attack Projectile (LRLAP) program office to develop a new IM propellant, i.e. formulate, scale-up, test.</p> <p><b><i>FY 2011 Plans:</i></b> Evaluate and demonstrate IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combine candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications. Evaluated and demonstrated IM boost propellant formulation for future Tomahawk systems which provide improved and comparable performance to in-service systems and better IM characteristics. Combined candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Design a composite booster case for Tomahawk which will improve IM performance for cookoff and impact scenarios. Demonstrate new formulations that will self extinguish while maintaining performance for Advanced Medium-Range Air to Air Missile (AMRAAM), Sidewinder and other air launched systems. Look at new way to develop rocket propellant formulations that meet performance requirements and solve IM deficiencies. IM problems resolution using top down approach. Evaluate ordnance and container concepts. Model applications that reduce and enhance IM warhead design. Assess the operations utility of current and projected IM improvements to determine current state of IM and prioritize future funding for IM technology. Assess shielding evaluation of Tomahawk VLS storage canister. New cooperative effort with Advanced Gun System (AGS) LRLAP to review modeling to solve impact and cookoff with AUR pallet.</p> <p><b><i>FY 2012 Plans:</i></b> Evaluate and demonstrate IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combine candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications. Evaluated and demonstrated IM boost propellant formulation for future Tomahawk systems which provide improved and comparable performance to in-service systems and better IM characteristics. Combined candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Design a composite booster case for Tomahawk which will improve IM performance for cookoff and impact</p>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>		<b>PROJECT</b> 0363: <i>Insensitive Munitions Adv. Development</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>scenarios. Demonstrate new formulations that will self extinguish while maintaining performance for Advanced Medium-Range Air to Air Missile (AMRAAM), Sidewinder and other air launched systems. Look at new way to develop rocket propellant formulations that meet performance requirements and solve IM deficiencies. IM problems resolution using top down approach. Evaluate ordnance and container concepts. Model applications that reduce and enhance IM warhead design. Assess the operations utility of current and projected IM improvements to determine current state of IM and prioritize future funding for IM technology. Assess shielding evaluation of Tomahawk VLS storage canister. New cooperative effort with Advanced Gun System (AGS) LRLAP to review modeling to solve impact and cookoff with AUR pallet.</p>						
<b>Accomplishments/Planned Programs Subtotals</b>				3.290	5.388	4.753
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
NOT APPLICABLE-						
<p>The Insensitive Munitions Advanced Development Program (IMAD) is assigned as a Non-ACAT program and therefore does not have program milestones like the ACAT I to IV programs. IMAD develops and evaluates IM technologies for use in Navy weapon systems and is not part of a particular weapon acquisition program.</p>						
<b>E. Performance Metrics</b>						
Quarterly Program Reviews						

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>	<b>PROJECT</b> 0363: <i>Insensitive Munitions Adv. Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PROPULSION DEV. AND EVAL.	WR	NAWC DIV/CHINA LAKE:WX	88.960	1.165	Nov 2010	1.050	Nov 2011	-		1.050	0.000	91.175	
EXPLOSIVES DEV. AND EVAL.	WR	NSWC/INDIAN HEAD DIV.:WX	73.406	1.600	Nov 2010	1.455	Nov 2011	-		1.455	0.000	76.461	
ORDNANCE DEV. AND EVAL.	WR	NSWC/DAHLGREN:WX	20.762	0.520	Nov 2010	0.450	Nov 2011	-		0.450	0.000	21.732	
GUN PROPULSION AND EVAL.	WR	NSWC/INDIAN HEAD DIV.:WX	1.749	1.203	Nov 2010	1.035	Nov 2011	-		1.035	0.000	3.987	
<b>Subtotal</b>			184.877	4.488		3.990		-		3.990	0.000	193.355	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PROGRAM MANAGEMENT SUPT	WR	NOSSA:IN HEAD MD	5.112	0.115	Nov 2010	0.128	Nov 2011	-		0.128	0.000	5.355	
PROGRAM MANAGEMENT SUPPORT	MIPR	DTIC:FT BELVOIR VA	-	0.785	Nov 2010	0.635	Nov 2011	-		0.635	0.000	1.420	
<b>Subtotal</b>			5.112	0.900		0.763		-		0.763	0.000	6.775	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		189.989	5.388	4.753	-	4.753	0.000	200.130

**Remarks**

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603609N: <i>Conventional Munitions</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

To design, develop, and demonstrate technologies and components for a kinetic energy payload for a 5-inch round. The Navy I-KEET program projectile features a forward expulsion mechanism to expel a multi-component kinetic energy payload with significantly increased on-target energy and expanded lethality footprint relative to its predecessor. The I-KEET round, considered to be a product-improved version of the MK182 I-KEET for ship self defense and force protection with higher lethality against a broader array of threats at a greater range.

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

<b>Congressional Add:</b> Improved Kinetic Energy Cargo Round	FY 2010	FY 2011
<i>FY 2010 Accomplishments:</i> - Further develop payload expulsion, payload dispersion, projectile body design, base plug strengthening, and nose removal. - Demonstrate all components in full scale bench tests and in full scale integrated live-fire warhead tests.	0.797	-
<b>Congressional Adds Subtotals</b>	0.797	-

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

N/A

**D. Acquisition Strategy**

Congressional Add

**E. Performance Metrics**

Quarterly Program Reviews.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603611M: <i>Marine Corps Assault Vehicles</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	302.099	242.765	12.000	-	12.000	36.665	105.625	196.317	156.988	Continuing	Continuing
0020: <i>AAAV</i>	302.099	242.765	-	-	-	-	-	-	-	0.000	544.864
0025: <i>New Amphibious Vehicle</i>	-	-	12.000	-	12.000	36.665	105.625	196.317	156.988	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This Program Element (PE) includes funds for the Expeditionary Fighting Vehicle (EFV) and the new Amphibious Vehicle (AV) Programs.

C0020: The Department of Defense is terminating the EFV program. The FY 2011 and FY 2010 funds will be used to cover termination costs as well as complete developmental efforts to include development and delivery of Software drop 10.2 and reliability growth development and testing through Knowledge Point 2 (KP-2). Efforts are to be completed in February 2011, with reporting and associated closeout tasks continuing into March 2011. These efforts will provide validated systems engineering and process models and initial design data valuable to inform and develop future Marine Corps requirements. FY11 funding will be required to complete these efforts as well as fund program termination costs to include prime contractor termination liability and closeout, closeout of support activities, and disposition of government property.

The EFV program, planned to be the successor to the Marine Corps' current amphibious vehicle was cancelled in January 2011. The program received approval to enter the System Development and Demonstration (SDD) Phase of the acquisition process during the Milestone II Defense Acquisition Board Readiness Meeting in November 2000. All program exit criteria were successfully met or exceeded. The initial SDD Phase (2001 through 2008) included validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV. A follow-on SDD Phase began in 2008 and included design, development, and reliability upgrades; increased RAM testing; modification of existing SDD prototypes; and manufacturing and testing of seven SDD prototype vehicles.

C0025: The AV program meets the Marine Corps' requirement for self-deploying, fully amphibious vehicles, maintaining the Marine Corps' amphibious forcible entry capability. The AV will be included as part of the Marine Corps' integrated and complementary portfolio of combat vehicles critical to the future expeditionary Marine Air Ground Task Force (MAGTF) operations.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	292.217	242.765	179.041	-	179.041
Current President's Budget	302.099	242.765	12.000	-	12.000
Total Adjustments	9.882	-	-167.041	-	-167.041
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	9.900	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-166.992	-	-166.992
• Rate/Misc Adjustments	-	-	-0.049	-	-0.049
• Congressional General Reductions Adjustments	-0.018	-	-	-	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0020: AAAV	302.099	242.765	-	-	-	-	-	-	-	0.000	544.864
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Department of Defense is terminating the EFV program. The FY 2011 and FY 2010 funds will be used to cover termination costs as well as complete developmental efforts to include development and delivery of Software drop 10.2 and reliability growth development and testing through Knowledge Point 2 (KP-2). Efforts are to be completed in February 2011, with reporting and associated closeout tasks continuing into March 2011. These efforts will provide validated systems engineering and process models and initial design data valuable to inform and develop future Marine Corps requirements. FY11 funding will be required to complete these efforts as well as fund program termination costs to include prime contractor termination liability and closeout, closeout of support activities, and disposition of government property.

The Expeditionary Fighting Vehicle (EFV) program, planned to be the successor to the Marine Corps' current amphibious vehicle, was cancelled in January 2011. The program received approval to enter the System Development and Demonstration (SDD) Phase of the acquisition process during the Milestone II Defense Acquisition Board Readiness Meeting in November 2000. All program exit criteria were successfully met or exceeded. The initial SDD Phase (2001 through 2008) included validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV. A follow-on SDD Phase began in 2008 and included design, development, and reliability upgrades; increased RAM testing; modification of existing SDD prototypes; and, manufacturing and testing of seven SDD prototype vehicles.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Design development, developmental testing, operational testing.</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> While terminating the EFV program, FY10 and FY11 funds will be utilized to support and complete certain development and testing efforts that will be integral to future amphibious vehicle development. FY11 funds reliability growth design and development, development and reliability growth testing, and engineering and logistics support that have already been accomplished, and completes the effort through KP-2. The completion of these efforts will provide validated systems engineering and process models and initial design data valuable to the development of future Marine Corps requirements.</p> <p><b>FY 2010 Accomplishments:</b> Continued engineering and logistics efforts to support design development, manufacturing planning, and design enhancements of the EFV(P) and EFV(C) designs. Continued the EFV survivability program. Continued developmental and reliability test support, and design, integration and testing of MS-C OA identified modifications. Continued development of Integrated Electronic Technical Manuals (IETM). Continued Developmental Testing (DT) and begin Reliability Growth Testing (RGT). Continued</p>	249.400 0	87.219 0	- 

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>design and development of follow-on reliability enhancements, subsystem design modifications, and modification of existing vehicles integrating reliability design changes. Procured test spares. Continued design, development and manufacture of new SDD prototypes, and begin delivery of prototype vehicles.</p> <p><b>FY 2011 Plans:</b> FY11 funds reliability growth design and development, development and reliability growth testing, and engineering and logistics support that have already been accomplished, and completes the effort through KP-2. This directly continues engineering and logistics efforts to support design development, manufacturing planning, and design enhancements of the EFV(P) and EFV(C) designs; continues development of Integrated Electronic Technical Manuals (IETM); continues Developmental Testing (DT) and Reliability Growth Testing (RGT); and continues design and development of follow-on reliability enhancements, subsystem design modifications, and modification of existing vehicles integrating reliability design changes, all through KP-2.</p>				
<p><b>Title:</b> Perform developmental testing, operational testing, RAM-D testing, Reliability Growth testing.</p> <p align="right"><b>Articles:</b></p>		9.420 0	2.878 0	-
<p><b>Description:</b> While terminating the EFV program, FY10 and FY11 funds will be utilized to support and complete certain development and testing efforts that will be integral to future amphibious vehicle development. FY11 funds the developmental and reliability growth testing efforts that have already been accomplished, and through the completion of KP-2.</p> <p><b>FY 2010 Accomplishments:</b> Continued to perform developmental/operational testing and RAM-D testing. Began Reliability Growth Testing (RGT).</p> <p><b>FY 2011 Plans:</b> Continue to perform developmental/operational testing and RGT.</p>				
<p><b>Title:</b> Provide program support for training development, technical publications and IETMS.</p> <p align="right"><b>Articles:</b></p>		9.135 0	0.262 0	-
<p><b>Description:</b> While terminating the EFV program, FY10 and FY11 funds will be utilized to support and complete certain development and testing efforts that will be integral to future amphibious vehicle development. FY11 funding is identified for Training Systems development efforts that have already been accomplished.</p> <p><b>FY 2010 Accomplishments:</b> Provided program support for training systems development and technical publications and IETMS; development of training systems courseware.</p> <p><b>FY 2011 Plans:</b></p>				



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
Provide program support for training systems development.			
<b>Title:</b> Contractor Support			
<b>Articles:</b>		14.952 0	3.183 0
<b>Description:</b> While terminating the EFV program, FY10 and FY11 funds will be utilized to support and complete certain development and testing efforts that will be integral to future amphibious vehicle development. FY11 funds contractor software development, technical engineering, and management support efforts that have already been accomplished, and continues funding to support efforts through the completion of KP-2.			-
<b>FY 2010 Accomplishments:</b> Provided contractor technical, engineering and management support for program planning, analysis and execution. Continue to provide software design, development and integration support.			
<b>FY 2011 Plans:</b> FY11 funds contractor software development, technical engineering, and management support efforts that have already been accomplished, and continues funding to support efforts through the completion of KP-2. Funding directly provides contractor technical, engineering and management support for program planning, analysis and execution and continue to provide software design, development and integration support through KP-2.			
<b>Title:</b> In-house Support			
<b>Articles:</b>		19.192 0	5.377 0
<b>Description:</b> While terminating the EFV program, FY10 and FY11 funds will be utilized to support and complete certain development and testing efforts that will be integral to future amphibious vehicle development. FY11 funds in-house software development, technical engineering, and logistics support efforts that have already been accomplished, and continues funding to support efforts through the completion of KP-2.			-
<b>FY 2010 Accomplishments:</b> Provided In-house technical engineering and integrated logistics support for program planning, analysis and execution. Procured ammunition in support of the EFV test program. Performed In-house software design, development, and analysis efforts.			
<b>FY 2011 Plans:</b> Provide In-house technical engineering and integrated logistics support for program planning, analysis and execution. Procure ammunition in support of the EFV test program. Perform In-house software design, development, and analysis efforts through KP-2.			
<b>Title:</b> Program Termination Costs		-	143.846

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p align="right"><b>Articles:</b></p> <p><b>Description:</b> Program Termination Costs.</p> <p><b>FY 2011 Plans:</b> Funding required to terminate program including contract closeout, termination liability, material disposition, facility costs, etc.</p>		0	
<b>Accomplishments/Planned Programs Subtotals</b>	302.099	242.765	-

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

N/A

**D. Acquisition Strategy**

The Department of Defense is terminating the EFV program. The FY 2011 and FY 2010 funds will be used to cover termination costs as well as complete developmental efforts to include development and delivery of Software drop 10.2 and reliability growth development and testing through Knowledge Point 2 (KP-2). Efforts are to be completed in February 2011, with reporting and associated closeout tasks continuing into March 2011. These efforts will provide validated systems engineering and process models and initial design data valuable to inform and develop future Marine Corps requirements. FY11 funding will be required to complete these efforts as well as fund program termination costs to include prime contractor termination liability and closeout, closeout of support activities, and disposition of government property.

**E. Performance Metrics**

Milestone Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
PDRR Contract	C/CPAF	GDLS:Woodbridge, VA	399.703	-		-		-		-	0.000	399.703	
System Design and Development	C/CPIF	GDLS:Woodbridge, VA	1,916.806	87.219	Oct 2010	-		-		-	0.000	2,004.025	
Other Product Development	C/CPIF	TBD:TBD	2.329	-		-		-		-	0.000	2.329	
Follow On Product Development	C/CPIF	TBD:TBD	-	-		-		-		-	0.000	0.000	
Regenerative Filtration	C/CPAF	Army:Edgewood Chem/Bio Center	3.327	-		-		-		-	0.000	3.327	
Survivability Contract	Various	NSMA:Arlington, VA	29.338	-		-		-		-	0.000	29.338	
Display Technology	SS/CPFF	ISR Corp:Baltimore, MD	1.640	-		-		-		-	0.000	1.640	
Intelligent Machining of Advanced Defense Materials	SS/FFP	GDLS:Woodbridge, VA	2.914	-		-		-		-	0.000	2.914	
Digital Facsimile Upgrade	SS/FFP	GD C4S:Taunton, MA	2.816	-		-		-		-	0.000	2.816	
Program Termination	Various	TBD:TBD	-	143.846	Jun 2011	-		-		-	0.000	143.846	
<b>Subtotal</b>			2,358.873	231.065		-		-		-	0.000	2,589.938	

**Remarks**  
Breakout of Program Termination by Cost Category Item Name is still being determined.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Integrated Logistics Support	Various	Various:Various	22.813	0.262	Mar 2011	-		-		-	0.000	23.075	
Training Devices/Simulators	C/CPFF	TBD:TBD	62.248	-	Jan 2011	-		-		-	0.000	62.248	
Tech Data & Pubs Development	Various	Various:Various	1.521	-	Mar 2011	-		-		-	0.000	1.521	
Support Equipment Development	Various	Various:Various	0.433	-		-		-		-	0.000	0.433	
<b>Subtotal</b>			87.015	0.262		-		-		-	0.000	87.277	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0020: <i>AAAV</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental, Operational and Live Fire Test & Evaluation	Various	Various:Various	112.704	2.878	Mar 2011	-		-		-	0.000	115.582	
<b>Subtotal</b>			112.704	2.878		-		-		-	0.000	115.582	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering and Technical Services	Various	Various:Various	62.148	-	Mar 2011	-		-		-	0.000	62.148	
Management Support Services	Various	Various:Various	66.058	3.183	Dec 2010	-		-		-	0.000	69.241	
Studies and Analyses	Various	Various:Various	1.238	-	Mar 2011	-		-		-	0.000	1.238	
In-House Technical Support	Various	Various:Various	148.760	3.842	Jun 2011	-		-		-	0.000	152.602	
Program Management Support	Various	Various:Various	23.762	-	Mar 2011	-		-		-	0.000	23.762	
Travel	Various	Various:Various	7.347	1.535	Sep 2011	-		-		-	0.000	8.882	
<b>Subtotal</b>			309.313	8.560		-		-		-	0.000	317.873	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
		Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Project Cost Totals</b>		2,867.905		242.765		-		-	0.000	3,110.670	

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

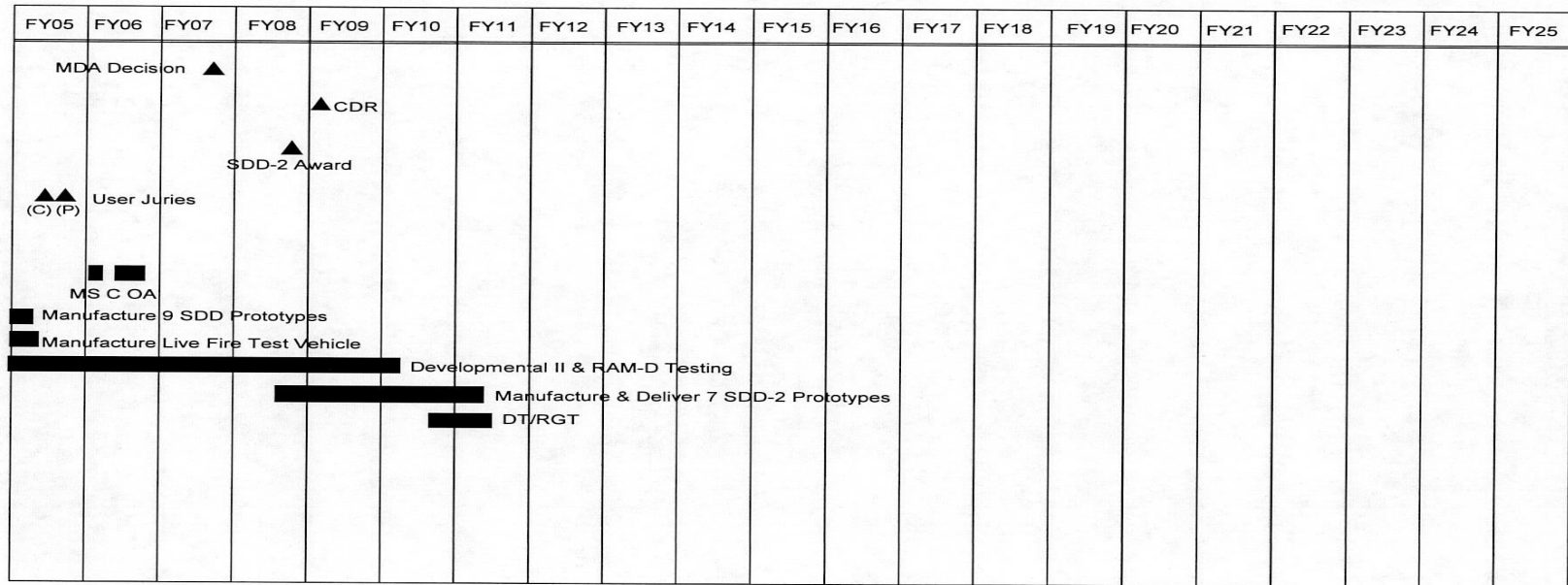
PE 0603611M: *Marine Corps Assault Vehicles*

**PROJECT**

0020: *AAAV*

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## EFV (AAAV) PROGRAM SCHEDULE



Program Cancelled

R-1 Item No. 51  
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Exhibit R-4  
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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0025: <i>New Amphibious Vehicle</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0025: <i>New Amphibious Vehicle</i>	-	-	12.000	-	12.000	36.665	105.625	196.317	156.988	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The new Amphibious Vehicle (AV) program meets the Marine Corps' requirement for self-deploying, fully amphibious vehicles, maintaining the Marine Corps' amphibious forcible entry capability. The AV will be included as part of the Marine Corps' integrated and complementary portfolio of combat vehicles critical to the future expeditionary Marine Air Ground Task Force (MAGTF) operations.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> New Accomplishment/Planned Program Entry	-	-	12.000
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> FY12 provides funding for requirements definition and development; development of an Analysis of Alternatives; development of an acquisition plan; initiation of other required acquisition documentation; and completion of economic analysis for the new Amphibious Vehicle.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	12.000

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

N/A

**D. Acquisition Strategy**

The AV acquisition strategy includes use of mature technological capabilities gained through EFV development. It includes models, simulation, and advanced technology research to optimize vehicle design while controlling vehicle cost.

**E. Performance Metrics**

TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0025: <i>New Amphibious Vehicle</i>
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Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Requirements/documentation development	Various	TBD:TBD	-	-		10.000	Nov 2011	-		10.000	0.000	10.000	
<b>Subtotal</b>			-	-		10.000		-		10.000	0.000	10.000	

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support Services	TBD	TBD:TBD	-	-		2.000	Nov 2011	-		2.000	0.000	2.000	
<b>Subtotal</b>			-	-		2.000		-		2.000	0.000	2.000	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-		12.000		-		12.000	0.000	12.000	

**Remarks**

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

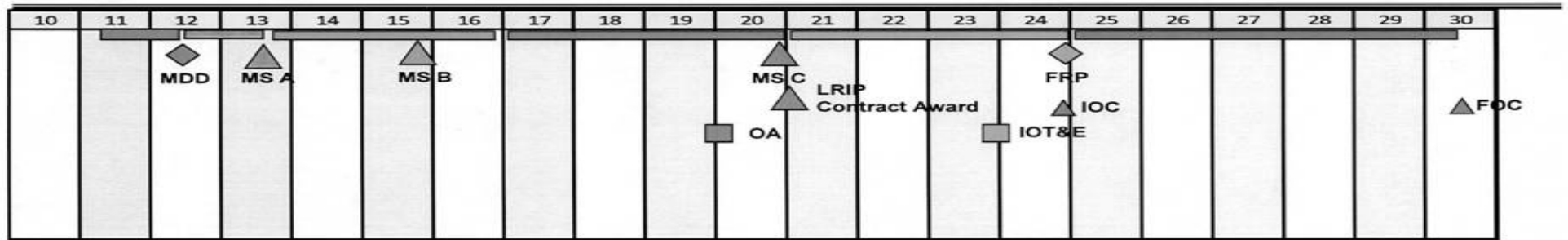
**R-1 ITEM NOMENCLATURE**

PE 0603611M: Marine Corps Assault Vehicles

**PROJECT**

0025: New Amphibious Vehicle

## AV PROGRAM NOTIONAL SCHEDULE





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603611M: <i>Marine Corps Assault Vehicles</i>	<b>PROJECT</b> 0025: <i>New Amphibious Vehicle</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0025</b>				
MS A	3	2013	3	2013
MS B	3	2015	3	2015

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>								
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>			PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>								
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>											
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	72.411	40.505	79.858	-	79.858	139.459	36.140	21.407	33.166	Continuing	Continuing
1964: <i>Anti-Armor Weapon System</i>	1.400	1.250	1.265	-	1.265	1.124	1.147	0.994	1.011	Continuing	Continuing
2614: <i>SMAW Follow-On</i>	13.240	7.493	6.746	-	6.746	9.372	0.348	0.370	0.378	Continuing	Continuing
3209: <i>Joint Light Tactical Vehicle</i>	52.991	31.762	71.847	-	71.847	128.963	34.645	20.043	31.777	Continuing	Continuing
9999: <i>Congressional Adds</i>	4.780	-	-	-	-	-	-	-	-	0.000	4.780

**A. Mission Description and Budget Item Justification**

This PE supports the demonstration and validation of Marine Corps Ground/Supporting Arms Systems for utilization in Marine Air-Ground Expeditionary Force amphibious operations.  
 This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental test related to specific ground weapon system.

**B. Program Change Summary (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	78.228	40.505	138.340	-	138.340
Current President's Budget	72.411	40.505	79.858	-	79.858
Total Adjustments	-5.817	-	-58.482	-	-58.482
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.701	-			
• SBIR/STTR Transfer	-4.097	-			
• Program Adjustments	-	-	-57.850	-	-57.850
• Rate/Misc Adjustments	-	-	-0.632	-	-0.632
• Congressional General Reductions Adjustments	-0.019	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Expeditionary Capabilities Laboratory*

<b>FY 2010</b>	<b>FY 2011</b>
2.390	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

Congressional Add: *Marine Expeditionary Rifle Squad Reconfigurable Vehicle Simulator*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	2.390	-
	4.780	-
	4.780	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 1964: <i>Anti-Armor Weapon System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1964: <i>Anti-Armor Weapon System</i>	1.400	1.250	1.265	-	1.265	1.124	1.147	0.994	1.011	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Anti-Armor Weapons System-Heavy (AAWS-H) program, working in concert with the US Army, will develop and integrate technology improvements into the Improved Target Acquisition System (ITAS) to meet Increment II system requirements as jointly agreed. Improvements will center on integration of sight image enhancements, far-target location accuracy improvements, traversing unit upgrades/improvements, battlefield networking communications capability and a laser designation capability.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Contractor conducted systems integration and qualification</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Supported contractor integration and qualification of sight image enhancement improvements.</p> <p><b>FY 2011 Plans:</b> Complete qualification of image enhancement improvements. Support contractor integration and qualification of positioning antennae improvements to increase accuracy of the Saber far-target location accuracy improvements.</p> <p><b>FY 2012 Plans:</b> Complete qualification of Saber far-target location accuracy improvements. Support contractor development and qualification of Saber traversing unit improvements.</p>	0.814 0	0.609 0	0.638 0
<p><b>Title:</b> Provide engineer and technical support</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Provided Army program management office engineering and test support for sight image enhancement improvements.</p> <p><b>FY 2011 Plans:</b> Provide continued Army program management office engineering and test support for sight image enhancements and for the integration of far-target location accuracy improvements.</p> <p><b>FY 2012 Plans:</b></p>	0.261 0	0.310 0	0.297 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 1964: <i>Anti-Armor Weapon System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Provide continued Army program management office engineering and test support for the far-target location accuracy improvements and for the integration of traversing unit improvements.			
<b>Title:</b> Provide Government program management/in-house support.	0.325	0.331	0.330
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Provided USMC program management office engineering and test support for sight image enhancement improvements.			
<b>FY 2011 Plans:</b> Provide continued USMC program management office engineering and test support for sight image enhancements and for the integration of far-target location accuracy improvements.			
<b>FY 2012 Plans:</b> Provide continued USMC program management office engineering and test support for the far-target location accuracy improvements and for the integration of traversing unit improvements.			
<b>Accomplishments/Planned Programs Subtotals</b>	1.400	1.250	1.265

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PMC/301700 : <i>Anti Armor System Heavy</i>	75.705	20.315	19.606	0.000	19.606	19.438	0.016	0.019	0.020	0.000	135.119

**D. Acquisition Strategy**

FY10-12 will develop, integrate, and qualify incremental improvements to the Saber system through a joint program with the Army to the original equipment manufacturer (OEM).

**E. Performance Metrics**

N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 1964: <i>Anti-Armor Weapon System</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Anti Armor	C/CPIF	Raytheon:McKinney, TX	0.814	0.609	Mar 2011	0.638	Mar 2012	-		0.638	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.814	0.609		0.638		-		0.638			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Anti Armor	WR	NSWC:Dahlgren, VA	0.261	0.310	Oct 2010	0.297	Oct 2011	-		0.297	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.261	0.310		0.297		-		0.297			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Anti Armor	C/CPIF	BAE Systems:Stafford, VA	0.325	0.331	Oct 2010	0.330	Oct 2011	-		0.330	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.325	0.331		0.330		-		0.330			

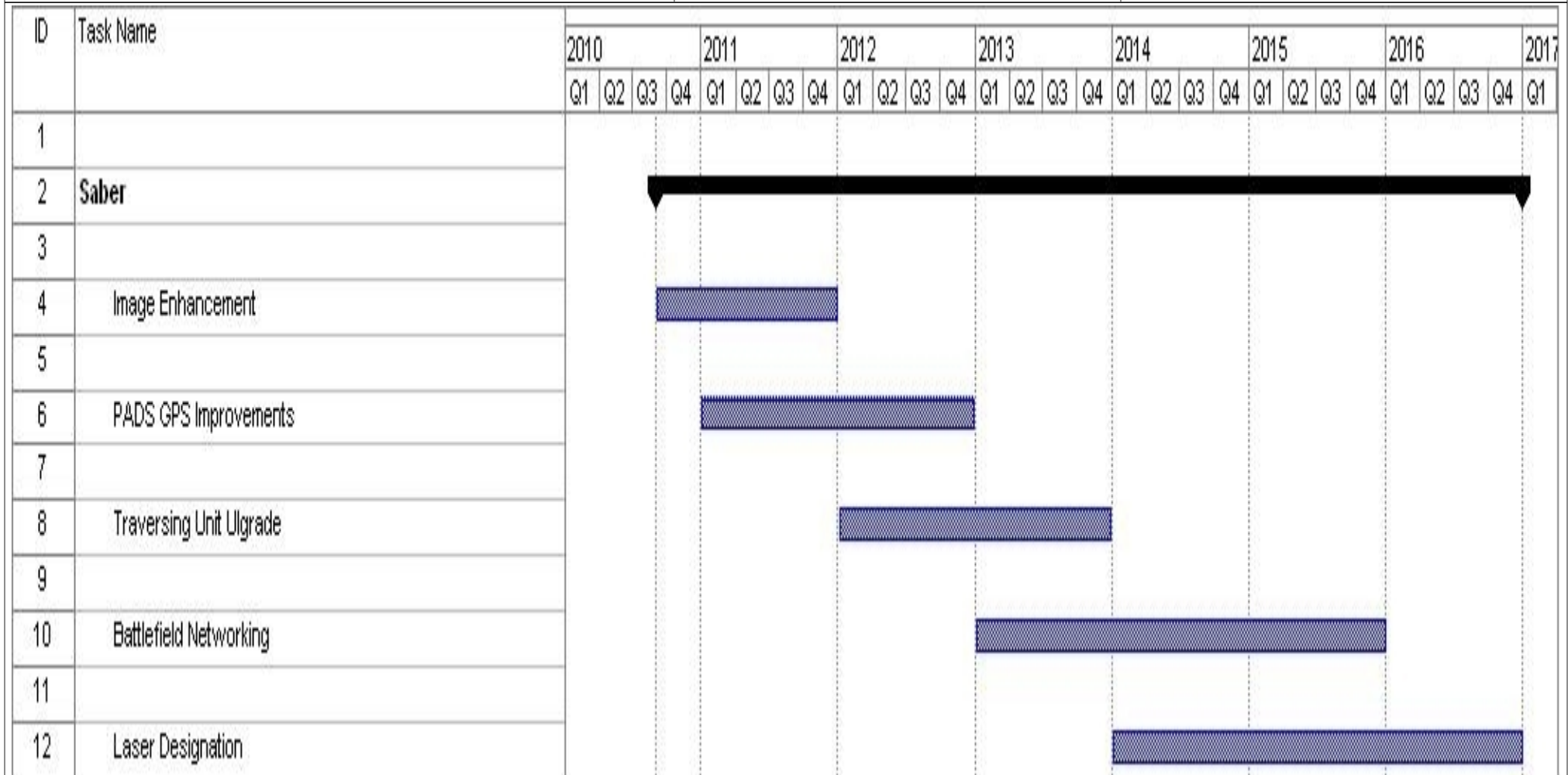
			<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			1.400	1.250		1.265		-		1.265			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 1964: <i>Anti-Armor Weapon System</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 1964: <i>Anti-Armor Weapon System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 1964</i></b>				
Image Enhancement Testing	4	2010	4	2011
PADS GPS Accuracy Improvement Testing	1	2011	4	2012
Traersing Unit Improvements Testing	1	2012	4	2013
Battlefield Networking Testing	1	2013	4	2015
Laser Designation Testing	1	2014	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2614: <i>SMAW Follow-On</i>	13.240	7.493	6.746	-	6.746	9.372	0.348	0.370	0.378	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Shoulder-Launched Multipurpose Assault Weapon II (SMAW II). Marine Expeditionary Forces will employ the Shoulder-Launched Multipurpose Assault Weapon II (SMAW II) across the spectrum of conflict, under all environmental conditions, to destroy a variety of ground targets. This requirement relates to The Concept for Future Military Operations on Urbanized Terrain, dated 25 July 1997, which requires Marine units to possess the capability to rapidly breach urban structures in order to facilitate and enhance their mobility in an urban environment. The SMAW II will support the Joint Operating Concept, Major Combat Operations via the Force Application Joint Functional Concept.

The mission of the SMAW II is to provide short-range assault fires in support of infantry forces attacking fortified positions and urban structures under all field and environmental conditions. This includes employment under Mission Oriented Protective Posture (MOPP) IV Level CBRN conditions. A typical operating environment for the SMAW II will consist of a mission duration of 96 hours. During this mission the system will be transported 40 km (25 miles) in the field handling mode, using various tactical means, 50% cross country. The system will be employed in the offense in either close or open terrain and subsequently assigned defensive positions in depth along infantry and vehicle choke points.

During the 96 hour mission duration, the expected combat load is six rounds of ammunition per system. The system is spread-loaded among a two-man team. The solution to the Follow-on-to-SMAW (FOTS) requirement is the SMAW II system, which will be developed in two distinct blocks. Block 1 of the SMAW II system consists of new SMAW launcher, which will be physically and functionally compatible with all current SMAW ammunition variants, and a Multipurpose (MP) Fire-From-Enclosure (FFE) SMAW round. Block 2 of the SMAW II system will be the addition of a Wall Breaching (WB) FFE round and a Common Practice (CP) FFE round. During FY11, the development and qualification of Block 1 will be completed. Full Rate Production of Block 1 will commence in FY12. During FY12-FY13, the development and qualification of Block 2 will be completed. Full Rate Production of Block 2 will commence in FY13.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Contractor conducted systems integration and qualification.	8.085	2.436	2.720
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b> Completed component, sub-system, system level Block 1 Design Verification Test (DVT); completed component, sub-system, system level Block 1 Critical Design Review (CDR) and Block 1 System Qualification Test Readiness Review (TRR); initiated Block 1 System Qualification hardware build.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>		<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
Complete Block 1 System Qualification hardware build; complete Block 1 System Qualification; complete Block 1 System Verification Review (SVR) and Functional Configuration Audit (FCA); complete Block 1 pre-Low Rate Initial Production (LRIP) Production Readiness Review; complete Milestone C (MS C) Decision Review and initiate Block 1 LRIP build.				
<b>FY 2012 Plans:</b> Complete Block 1 Initial Operational Test and Evaluation (IOT&E); complete Block 1 Full Rate Production (FRP) Decision Review; complete Block 2 CDR and TRR; initiate Block 2 System Qualification.				
<b>Title:</b> Provide engineer and technical support.				
				<b>Articles:</b>
				3.931
				0
				3.239
				0
				3.245
				0
<b>FY 2010 Accomplishments:</b> Provided engineering support for the Block 1 CDR, Qualification TRR, and System Qualification Testing; planned and coordinated all required System Safety Reviews; maintained the requirements engineering data to include review and acceptance of the deliverable draft Product Baseline; continued to develop, refine and operate the Government independent 6-DOF flight simulation model of the SMAW II system; established the SMAW II test range and conduct Environmental, Insensitive Munitions, Hazard Class, Flight, ESD, EMI, EME, and HERO testing; provided review of all contract technical deliverables.				
<b>FY 2011 Plans:</b> Provide engineering support for the Block 1 System Qualification Testing, SVR, FCA, and pre-LRIP PRR; plan and coordinate all required System Safety Reviews; provide engineering support to LRIP First Article Testing (FAT) and Lot Acceptance (LAT); continue to refine and operate the Government independent 6-DOF flight simulation model of the SMAW II system; provide review of all contract technical deliverables.				
<b>FY 2012 Plans:</b> Provide engineering support for the Block 2 CDR, Qualification TRR and System Qualification testing; plan and coordinate all required Block 2 System Safety Reviews; maintain the requirements engineering data to include review and acceptance of the deliverable draft Product Baseline; conduct Block 2 Environmental, Insensitive Munitions, Hazard Class, Flight, ESD, EMI, EME; provide review of all contract technical deliverables.				
<b>Title:</b> Provide Government program management/in-house support.				
				<b>Articles:</b>
				0.592
				0
				0.388
				0
				0.367
				0
<b>FY 2010 Accomplishments:</b> Provided administrative and technical support to all programmatic and technical reviews; maintained programmatic documentation change management system; maintained CDRL deliverables review and management system; participated in all program IPTs;				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
updated the SMAW II Supportability Plan and prepared all Acquisition Logistics documentation; maintained the SMAW II LCCE; provided EVMS analytical support; managed Action Item database. <b>FY 2011 Plans:</b> Provide administrative and technical support to all programmatic and technical reviews; maintain programmatic documentation change management system; maintain CDRL deliverables review and management system; participate in all program IPTs; update the SMAW II Supportability Plan and prepare all Acquisition Logistics documentation; maintain the SMAW II LCCE; provide EVMS analytical support; manage Action Item database. <b>FY 2012 Plans:</b> Provide administrative and technical support to all programmatic and technical reviews; maintain programmatic documentation change management system; maintain CDRL deliverables review and management system; participate in all program IPTs; update the SMAW II Supportability Plan and prepare all Acquisition Logistics documentation; maintain the SMAW II LCCE; provide EVMS analytical support; manage Action Item database.				
<b>Title:</b> Provide operational test support planning and document preparation <b>Articles:</b>		0.632 0	1.430 0	0.414 0
<b>FY 2010 Accomplishments:</b> Completed initial and final drafts of Operational Test and Evaluation (OT&E) Detailed Test Plan documentation; reviewed all DVT test reports and data; participated in the update to the TEMP; provided operational test expertise to all programmatic and technical reviews. <b>FY 2011 Plans:</b> Complete all SMAW II Block 1 IOT&E planning; provide operational test expertise to all programmatic and technical reviews. <b>FY 2012 Plans:</b> Conduct and report the results of the SMAW II Block 1 IOT&E; provide operational test expertise to all programmatic and technical reviews.				
<b>Accomplishments/Planned Programs Subtotals</b>		13.240	7.493	6.746

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PMC/301600: <i>Follow on to SMAW</i>	0.000	21.570	46.563	0.000	46.563	41.140	20.157	18.894	19.162	0.000	167.486

**D. Acquisition Strategy**

FY10-FY11 strategy is to complete development and qualification of the Block 1 SMAW II system (i.e. new SMAW Launcher and new Multi Purpose Fire From Enclosure (MP FFE) round). FY12-FY13 strategy is to complete the IOT&E of the SMAW II Block 1 systems; award sole source contract to SMAW II Block 1 contractor to complete development and qualification of the SMAW II Block 2 system (i.e. a new Wall Breaching (WB) FFE and Common Practice (CP) FFE rounds).

**E. Performance Metrics**

Milestone Reviews; Technical Reviews; Earned Value Management data.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Integration	C/CPFF	Nammo Talley:Meza, AZ	22.096	2.436	Oct 2010	2.720	Nov 2011	-		2.720	Continuing	Continuing	Continuing
<b>Subtotal</b>			22.096	2.436		2.720		-		2.720			

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Spt	WR	NSWC:Dahlgren, VA	7.102	3.239	Oct 2010	3.245	Nov 2011	-		3.245	Continuing	Continuing	Continuing
<b>Subtotal</b>			7.102	3.239		3.245		-		3.245			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Testing and Support	WR	MCOTEA:Quantico, VA	1.373	1.430	Oct 2010	0.367	Nov 2011	-		0.367	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.373	1.430		0.367		-		0.367			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Mgmt and Engineering Support	C/CPIF	BAESystems:Stafford, VA	1.689	0.388	Oct 2010	0.414	Nov 2011	-		0.414	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.689	0.388		0.414		-		0.414			

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			32.260	7.493		6.746		-		6.746			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2012 Navy						<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>			<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>		
	<b>Total Prior Years Cost</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

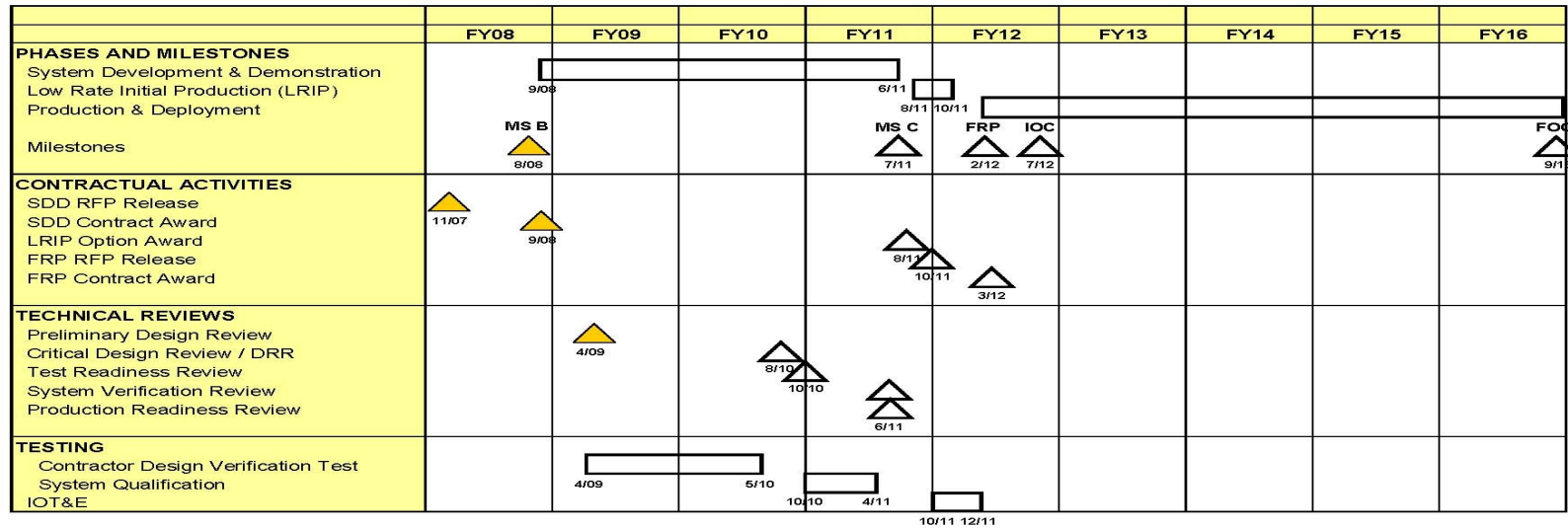
**R-1 ITEM NOMENCLATURE**

PE 0603635M: *Marine Corps Grnd Cmbt/Supt Sys*

**PROJECT**

2614: *SMAW Follow-On*

**SMAW II BLOCK 1 MASTER SCHEDULE**

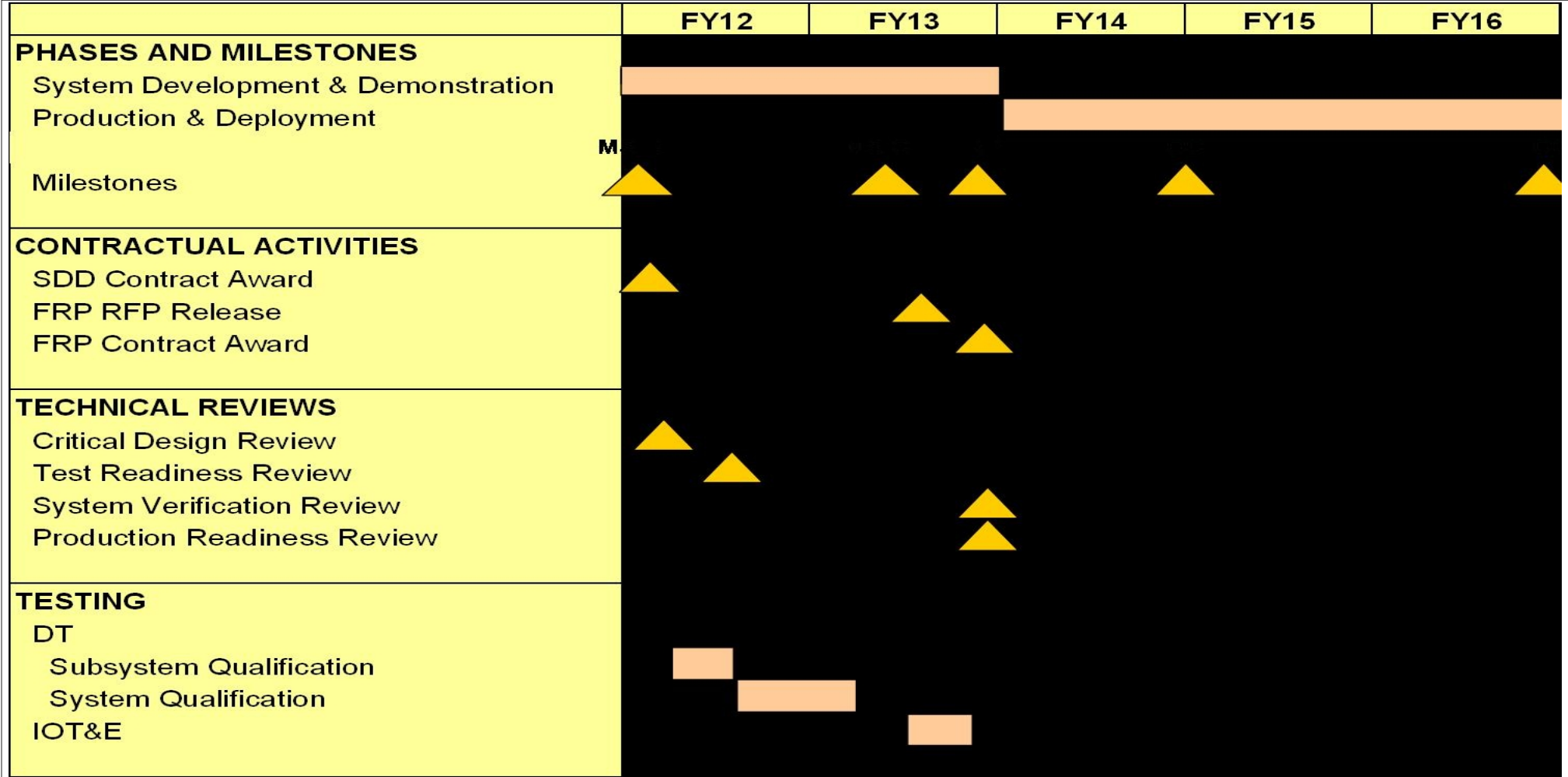




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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2614</b>				
Block 1 - System Development & Demonstration	1	2010	4	2011
Block 1 - Contractor Design Verification Test	1	2010	3	2010
Block 1 - Critical Design Review/DRR	4	2010	4	2010
Block 1 - Test Readiness Review	1	2011	1	2011
Block 1 - System Qualification	1	2011	3	2011
Block 1 - Low Rate Initial Production (LRIP)	3	2011	1	2012
Block 1 - System Verification Review	3	2011	3	2011
Block 1 - Production Readiness Review	3	2011	3	2011
Block 1 - Milestone C	4	2011	4	2011
Block 1 - LRIP Option Award	4	2011	4	2011
Block 1 - FRP RFP Release	1	2012	1	2012
Block 1 - IOT&E	1	2012	1	2012
Block 1 - FRP	2	2012	2	2012
Block 1 - FRP Contract Award	2	2012	2	2012
Block 1 - Full Rate Production & Deployment	3	2012	4	2016
Block 1 - IOC	4	2012	4	2012
Block 1 - FOC	4	2016	4	2016
Block 2 - System Development & Demonstration	1	2012	4	2013
Block 2 - Milestone B	1	2012	1	2012
Block 2 - SDD Contract Award	1	2012	1	2012
Block 2 - Critical Design Review	1	2012	1	2012

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 2614: <i>SMAW Follow-On</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Block 2 - Subsystem Qualification	1	2012	2	2012
Block 2 - Test Readiness Review	3	2012	3	2012
Block 2 - System Qualification	3	2012	1	2013
Block 2 - Milestone C	2	2013	2	2013
Block 2 - FRP RFP Release	3	2013	3	2013
Block 2 - IOT&E	3	2013	4	2013
Block 2 - FRP Contract Award	4	2013	4	2013
Block 2 - System Verification Review	4	2013	4	2013
Block 2 - Production Readiness Review	4	2013	4	2013
Block 2 - Production & Deployment	1	2014	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3209: <i>Joint Light Tactical Vehicle</i>	52.991	31.762	71.847	-	71.847	128.963	34.645	20.043	31.777	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

RDT&E Article Qty are: FY10 (2), FY12/13 (32), FY16 (6). Additional hardware requirements for EMD include trailers and ballistic hulls, as well as kits (including armor).

The HASC FY11 review directed the Services to separate the JLTV program into distinct program elements to provide Congress with increased transparency and allow for more effective oversight. The Department will adhere with the Congressional direction, but was unable to convert the PB12 budget documentation in time for this submission. The Department will submit the PB12 budget in PE 0603635M and move all funding to the new PE 0605812M in the PB13 budget review.

**A. Mission Description and Budget Item Justification**

JLTV Family of Vehicles (FOV): The Defense Acquisition Executive's mandate was for the JLTV FOV to undergo a robust Technology Development (TD)Phase, with multiple, competitive prototypes, to ensure requirements are achievable and verified by demonstration of those systems. FY10 and future funding supports the development and testing of JLTV, which is a joint and international R&D program between the Army and Marine Corps, with the Australian Army participating under a Project Arrangement, in the TD phase. The JLTV goal is a FOV with companion trailers capable of performing multiple mission roles that will be designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations. JLTV objectives include increased protection and performance over the current fleet; minimizing ownership costs by maximizing commonality, fuel efficiency, and other means; and maintaining effective competition throughout the lifecycle. The FOV includes multiple sub-configurations (and companion trailers) performing varying roles.

Commonality of components, maintenance procedures, training, etc. between vehicles and trailers is expected to be inherent in FOV solutions within and across payload categories to minimize total ownership cost. During FY12, major budget activities will support source selection activities, award of two Engineering Manufacturing Development (EMD) contracts, the design and material procurement for fabrication of EMD prototypes, completion of IBRs and PDRs, and hull and ballistic coupon testing.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Prototype Article	3.600	1.800	20.100
<b>Articles:</b>	2	0	32
<b>FY 2010 Accomplishments:</b> Design and fabrication of additional prototypes to focus on reliability & survivability enhancements.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Design and fabrication of additional prototypes to focus on reliability & survivability enhancements. <b>FY 2012 Plans:</b> Begin material procurements for EMD prototypes. Fabrication concludes in FY13.				
<b>Title:</b> Primary and Ancillary Hardware Development , SE, and Source Selection  <b>FY 2010 Accomplishments:</b> Conducted CDRs for three vendors in the 1st quarter. Ballistic hulls delivered. Test Readiness Reviews successfully completed in the 3rd quarter. Vehicles, total of 21 for Army and USMC, and trailers, delivered in the 3rd quarter, on schedule. Design of a CAT A enhanced protection variant commenced.  <b>FY 2011 Plans:</b> Close out TD phase development contracts and test support. Take delivery of CAT A EP prototypes. Perform source selection activities.  <b>FY 2012 Plans:</b> Source selection activities and award multiple Engineering and Manufacturing Development (EMD) contracts to design FoV subconfigurations. Conduct program IBRs, PDRs, and obtain MS B decision.		<b>Articles:</b> 26.874 0	8.691 0	36.550 0
<b>Title:</b> GFE and Tooling to Support Product Development and Testing  <b>FY 2010 Accomplishments:</b> Procure GFE long lead items required to support EMD prototype integration efforts. EMD contracts award FY12.  <b>FY 2011 Plans:</b> Procure GFE long lead items required to support EMD prototype integration efforts. EMD contracts award FY12.  <b>FY 2012 Plans:</b> Procure GFE long lead items required to support EMD prototype integration efforts.		<b>Articles:</b> 0.350 0	3.590 0	5.173 0
<b>Title:</b> Support Test and Evaluation Program with Army  <b>FY 2010 Accomplishments:</b>		<b>Articles:</b> 11.357 0	9.047 0	2.093 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>		<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
Completed armor coupon testing. Began reliability, availability, & maintainability (RAM) testing and performance testing. Prototypes delivered on schedule in the 3rd quarter. Successfully conducted Test Readiness Reviews with each vendor. <b>FY 2011 Plans:</b> Complete TD phase T&E activities. Complete Cat A EP testing. Conduct User Evaluations and prototype ballistic testing. Produce and staff T&E reports. Support EMD source selection activities. <b>FY 2012 Plans:</b> Support EMD source selection activities. Conduct coupon and ballistic cab testing.				
<b>Title:</b> ILS and Facilities Documentation/Analysis and Develop Support Engineering <b>Articles:</b>				4.118 0
				1.628 0
				1.609 0
<b>FY 2010 Accomplishments:</b> Initiating facilities analysis at numerous USMC sites, conducting logistics supportability demonstrations and continuing development of logistic planning documentation and strategy. <b>FY 2011 Plans:</b> Complete facilities analysis, support GFE management, and source selection activities. <b>FY 2012 Plans:</b> Continue the development of logistical documentation, and provide oversight to programmatic and contractual issues related to logistics.				
<b>Title:</b> Program Management Support <b>Articles:</b>				6.742 0
				7.006 0
				6.322 0
<b>FY 2010 Accomplishments:</b> Supported program operations, including design (e.g., CDRs) and readiness reviews, knowledge point reviews, test events and key program planning activities in preparation of MS B. <b>FY 2011 Plans:</b> Continue support of program operations and planning activities. Key events include request for proposal (RFP) release, source selection activities, completion of Technology Development (TD) testing. <b>FY 2012 Plans:</b> Continue support of program operations and planning activities. Key events include source selection activities, EMD contract awards and the start of EMD design, and attainment of MS B.				
<b>Accomplishments/Planned Programs Subtotals</b>				52.991
				31.762
				71.847

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
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**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2010	FY 2011	FY 2012			FY 2013	FY 2014	FY 2015	FY 2016	Cost To	
			Base	OCO	Total					Complete	Total Cost
• PMC/5095: <i>JLTV</i>	0.000	0.000	0.000	0.000	0.000	0.000	14.765	147.754	236.941	Continuing	Continuing
• USA/0603804A - L04: <i>Log &amp; Eng Equip Adv Dev-JLTV</i>	30.874	52.925	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	210.774
• USA/0604804A - L50: <i>Log &amp; Eng Equip Eng Dev-JLTV</i>	0.000	0.000	172.093	0.000	172.093	53.254	52.049	52.488	52.863	Continuing	Continuing
• USA/D15603A: <i>JLTV OPA</i>	0.000	0.000	0.000	0.000	0.000	187.807	592.644	4.182	921.550	Continuing	Continuing

**D. Acquisition Strategy**

The JLTV Acquisition Strategy for the Technology Development (TD) phase, FY08-11, was to competitively award multiple contracts. The TD phase contracts were awarded on October 29, 2008 under a full and open competition process to BAE Systems Land & Armament Systems-Ground Systems Division; General Tactical Vehicles (a Joint Venture of General Dynamics Land Systems, Inc. and AM General, LLC); and Lockheed Martin Systems Integration. During this phase, the contractors were required to design the JLTV Family of Vehicles (FoV) and fabricate and test select prototypes and trailers for payload Categories A, B, and C. The fabricated prototypes are undergoing developmental testing, as well as, limited user assessments in a relevant environment, at Government test centers. The addition of Australian prototypes to the program has further reduced risk. The goal is to ensure the family is mature in terms of supporting technologies and full system integration for MS B approval and entry into the Engineering Manufacturing Development (EMD) phase. The program plans to award two competitive contracts in EMD. Prior to Milestone C, the program will down select to one contractor. This contractor will then go into operational testing and Low Rate Initial Production (LRIP). International participation will be offer during EMD.

**E. Performance Metrics**

Milestone Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development - TD	C/CPFF	BAE Systems:Santa Clara, CA	31.865	-		-		-		-	0.000	31.865	
Primary Hardware Development - TD	C/CPFF	General Tactical Vehicles:Sterling, MI	25.738	-		-		-		-	0.000	25.738	
Primary Hardware Development - TD	C/CPFF	Lockheed Martin:Owego, NY	26.966	-		-		-		-	0.000	26.966	
Primary Hardware Development - EMD	TBD	TBD:Various	-	-		33.400	Mar 2012	-		33.400	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	Various:Various	5.604	2.891	Mar 2011	0.650	Feb 2012	-		0.650	Continuing	Continuing	Continuing
Government Furnished Equipment (GFE)	MIPR	Various:Various	0.661	3.590	May 2011	5.173	Mar 2012	-		5.173	Continuing	Continuing	Continuing
JLTV Tech Demonstrator Design and Eval	C/CPFF	NATC:Carson City, NV	1.414	-		-		-		-	0.000	1.414	
Prototype	TBD	TBD:Various	3.600	1.800	Jan 2011	20.100	Mar 2012	-		20.100	Continuing	Continuing	Continuing
Source Selection-EMD	MIPR	TBD:Various	-	5.800	Apr 2011	2.500	Oct 2011	-		2.500	0.000	8.300	
<b>Subtotal</b>			95.848	14.081		61.823		-		61.823			

**Remarks**

Contracts for BAE and GTV are cost/share contracts. EMD contract type is currently under review. Program will award two EMD contracts, which will include prototype fabrication. Various GFE will be refurbished after the TD phase and procured for EMD. Funding will be executed primarily as MIPRS via procuring activities. SE and Source Selection activities will fund various Government and support organizations.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Training Development	C/CPFF	WBB:Indian Head, MD	0.960	0.175	Dec 2010	0.119	Feb 2012	-		0.119	Continuing	Continuing	Continuing
Integrated Logistics Support	Various	Various:Various	6.309	1.453	Jan 2011	1.490	Feb 2012	-		1.490	Continuing	Continuing	Continuing
<b>Subtotal</b>			7.269	1.628		1.609		-		1.609			



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>				

**Remarks**  
FY11 ILS activities and completion of facilities analysis, and support GFE management. In FY12, GFE management continues the development of logistical documentation, and provide oversight to programmatic and contractual issues related to logistics.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>				
Test Developmental and Evaluation	MIPR	Aberdeen:Aberdeen Proving Grounds, MD	12.200	3.796	Dec 2010	1.529	Mar 2012	-		1.529	Continuing	Continuing	Continuing	
Test Developmental and Evaluation Oversight & Support	MIPR	Various:Various	2.057	1.551	Dec 2010	0.564	Mar 2012	-		0.564	Continuing	Continuing	Continuing	
Test Developmental and Evaluation Oversight & Support	MIPR	Yuma Proving Ground:Yuma, AZ	-	3.700	Dec 2010	-		-		-	0.000	3.700		
<b>Subtotal</b>			14.257	9.047		2.093		-		2.093				

**Remarks**  
T&E oversight and certification activities are performed by MCOTEA and other organizations, such as, JITC.

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>		<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>				
Program Management Support	C/FFP	SAIC:Dumfries, VA	8.128	-		-		-		-	0.000	8.128	8.128	
Program Management Support	C/CPFF	BAH:Mclean, VA	11.947	3.828	Jan 2011	3.049	Jan 2012	-		3.049	Continuing	Continuing	Continuing	
Program Management Support	C/CPFF	Various:Various	-	2.973	Jan 2011	3.047	Jan 2012	-		3.047	Continuing	Continuing	Continuing	
Travel	Various	MCSC:Quantico, VA	0.623	0.205	Oct 2010	0.226	Oct 2011	-		0.226	Continuing	Continuing	Continuing	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

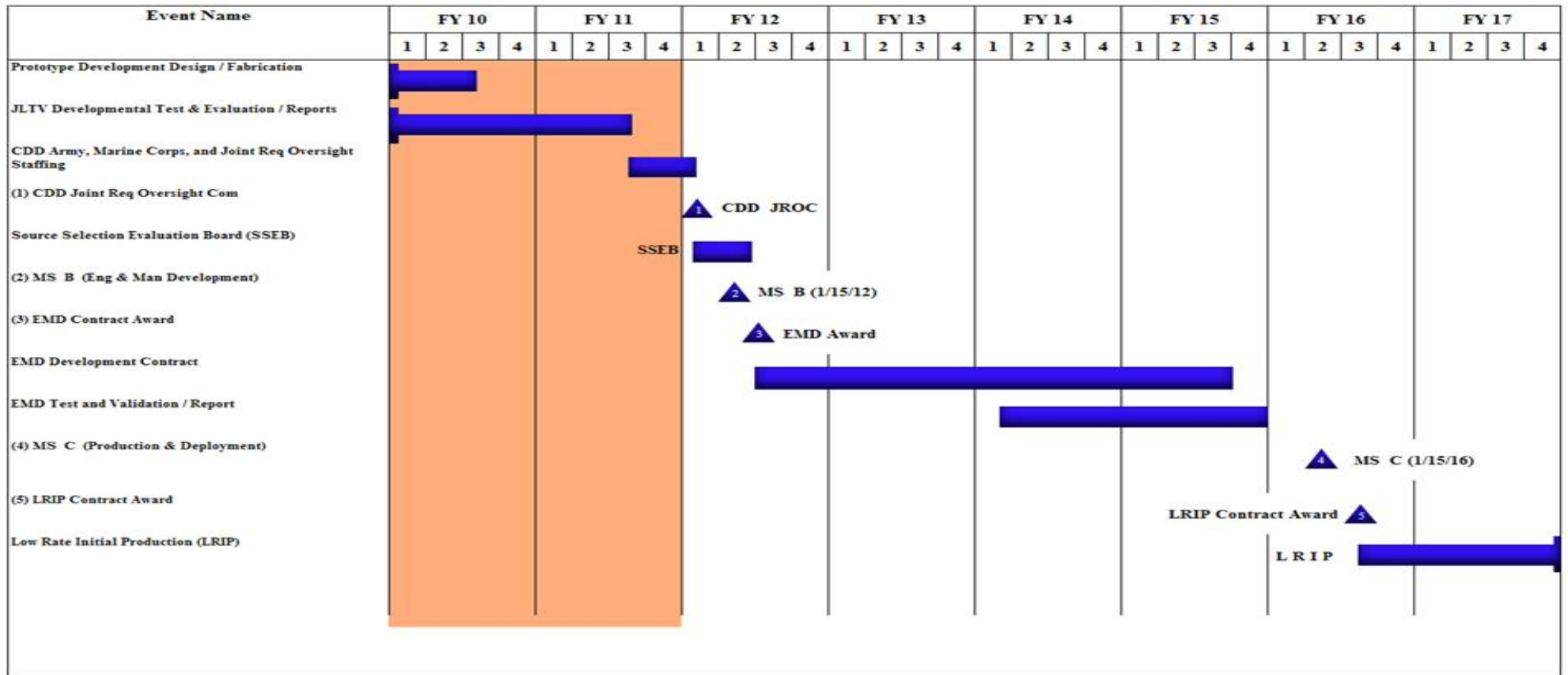
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>
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<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			20.698	7.006		6.322		-		6.322			
<b>Project Cost Totals</b>			138.072	31.762		71.847		-		71.847			

**Remarks**  
 Cost to complete and total cost cannot be provided at this time, until the program proceeds to MS B and an Acquisition Program Baseline is established.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 3209: <i>Joint Light Tactical Vehicle</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3209</b>				
MS B Decision	2	2012	2	2012
EMD Contract(s) Award	2	2012	2	2012
EMD Design/Fabrication/Testing	2	2012	3	2015
MS C/LRIP Decision	2	2016	2	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603635M: <i>Marine Corps Grnd Cmbt/Supt Sys</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	4.780	-	-	-	-	-	-	-	-	0.000	4.780
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Marine Expeditionary Rifle Squad Reconfigurable Vehicle Simulator - The reconfigurable vehicle simulator is providing a tool to optimize combat loaded Marines, in various billets, optimal seating positions within a mobility platform. The primary mobility platform this will provide data for is the Joint Light Tactical Vehicle (JLTV). The reconfigurable vehicle simulator will be installed in the on-base Gruntworks Squad Integration Facility.

Expeditionary Capabilities Laboratory - The expeditionary capabilities laboratory is exploring technologies in standoff bomb detection, power and energy, fuel efficiency, modeling and simulation, enhanced safety survivability and force protection, persistent surveillance and sensors.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Expeditionary Capabilities Laboratory	2.390	-
<b>FY 2010 Accomplishments:</b> FY-10 accomplishments include strategic planning, reports for measurable outcomes and assessments of technologies, and other briefing materials. The period of performance for this effort is 18 months.		
<b>Congressional Add:</b> Marine Expeditionary Rifle Squad Reconfigurable Vehicle Simulator	2.390	-
<b>FY 2010 Accomplishments:</b> Accomplishments in FY-10 include system requirements definition, system functionality, and design analysis with a hardware delivery in FY-11 based on a 15 month period of performance.		
<b>Congressional Adds Subtotals</b>	4.780	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.253	26.873	33.654	1.500	35.154	50.659	42.061	29.793	34.219	Continuing	Continuing
0377: <i>JT Service Expl Ord Disp System</i>	12.137	17.882	17.935	1.500	19.435	27.859	22.009	14.366	13.582	Continuing	Continuing
1317: <i>EOD Diving System</i>	3.371	3.611	3.234	-	3.234	4.496	2.866	2.921	4.955	Continuing	Continuing
3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>	-	0.471	-	-	-	-	-	-	-	0.000	0.471
4023: <i>VSW MCM/Force Protection UUV</i>	4.745	4.909	12.485	-	12.485	18.304	17.186	12.506	15.682	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This is a Joint Service Program. This program provides for the development of Explosive Ordnance Disposal tools and equipment for use by all military services. The responsibility is assigned to the Navy as single service manager, by Department of Defense Directive 5160.62 of 26 April 1989, for management of the Joint Service Explosive Ordnance Disposal Research and Development Program. Proliferation of sophisticated types of foreign and domestic ordnance and Improvised Explosive Devices necessitate a continuing development program to provide Explosive Ordnance Disposal personnel of all military services with the special equipment and tools required to support this mission. This program also provides life support related equipment necessary to support the performance of Navy Explosive Ordnance Disposal tasks underwater. This equipment must have inherently low acoustic and magnetic signatures in order to allow the Explosive Ordnance Disposal technician to safely approach, render-safe and dispose of sea mines and other underwater ordnance. This program also provides force protection of all military services against Radio Controlled Improvised Explosive Devices (RCIED) to prevent initiation. The Navy has been designated as DOD Executive Agent and Single Manager for Military Ground-Based Counter Radio-Controlled Improvised Explosive Electronic Warfare (CREW) Technology by DOD Directive 5101.14 of 11 June 2007, requiring RDT&E to develop capabilities that meet joint requirements.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	20.966	25.873	25.261	-	25.261
Current President's Budget	20.253	26.873	33.654	1.500	35.154
Total Adjustments	-0.713	1.000	8.393	1.500	9.893
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.121	-			
• Program Adjustments	-	1.000	9.991	1.500	11.491
• Section 219 Reprogramming	-0.592	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.598	-	-1.598

**Change Summary Explanation**

Program Adjustments: FY12 \$9,893K in Total Adjustments: Increase EOD Underwater Unmanned Vehicle (UUV) Development (\$3,600K), EOD Underwater Unmanned Vehicle Neutralization (UUV-N) (\$2,400K), Diver Life Support (\$500K), and EOD High Fidelity Weapons Mass Destruction (HFWI) (\$4,400K), Joint Service EOD Robotics OCO (\$1,500K) and decrease for Misc. Adjustments (\$-2,507K).



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0377: <i>JT Service Expl Ord Disp System</i>	12.137	17.882	17.935	1.500	19.435	27.859	22.009	14.366	13.582	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides Explosive Ordnance Disposal personnel of all military services with the specialized equipment and tools required to support their mission of detection/location, identification, render-safe, recovery, field and laboratory evaluation, and disposal of unexploded ordnance (UXO) that is a threat to military operations, installations, personnel, or material. UXO includes foreign and domestic, both conventional and non-conventional, including Improvised Explosive Devices (IEDs). High Fidelity Weapons Mass Destruction performs detection and identification of hazardous materials contained in devices using radiological and biological means. Advanced EOD Robot System consists of multiple interoperable robot systems. The first class of robot and the architecture for the system will be developed first, then the other classes of robots will be developed. Project Unit 0377: FY11 OCO Request: Continuous Improvement for the MK1 & MK2 Joint Service EOD robots used by EOD technicians when responding to IED incidents in OIF and OEF.

\* FY11 issue paper submitted to realign zero sum funding from project 3177 to 0377.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> EOD FUTURE RADIOGRAPHIC SYSTEMS (FRS) AND EOD DECISION SUPPORT SYSTEMS (DSS)	6.580	4.657	4.389	-	4.389
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b> Developed Production decision for EOD Future Radiographic System (FRS) and initiate development of increment one for the system.					
<b>FY 2011 Plans:</b> Conduct development of incremental capabilities for the JEOD Decision Support System (DSS) and Future Radiographic System (FRS).					
<b>FY 2012 Base Plans:</b> Develop Continuous Improvements of incremental capabilities for JEOD Decision Support System (DSS) and continue development of Future Radiographic Systems (FRS).					
<b>Title:</b> HIGH FIDELITY WEAPONS MASS DESTRUCTION (WMD)	0.957	3.144	5.700	-	5.700
<b>Articles:</b>	0	0	0		0
<b>FY 2010 Accomplishments:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>
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**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Continued technology Development for JLONS in preparation for the formal acquisition program. <b>FY 2011 Plans:</b> Initiate project to expand EOD's capability to detect and/or identify potential Weapons Mass Destruction (WMD) threats. <b>FY 2012 Base Plans:</b> Continue to develop a family of systems to address the capabilities gaps in detection and identification of Weapons Mass Destruction (WMD) threats.					
<b>Title:</b> EOD ROBOTICS  <b>Articles:</b>	3.100 0	4.000 0	5.063 0	-	5.063 0
<b>FY 2010 Accomplishments:</b> Developed Advanced EOD Robot System acquisition project. Advanced EOD Robot System consists of multiple interoperable robot systems. The first class of robot and the architecture for the system will be developed first, then the other classes of robots will be developed. <b>FY 2011 Plans:</b> Continue development of Advanced EOD Robot System and develop improved capabilities for existing EOD robot configurations. <b>FY 2012 Base Plans:</b> Continue development of Advanced EOD Robot System and develop improved capabilities for existing EOD robot configurations.					
<b>Title:</b> TCM AN/PLT-XXX SYSTEMS/ELECTRONIC SAFE/ARM FUZES  <b>Articles:</b>	1.000 0	3.181 0	1.741 0	-	1.741 0
<b>FY 2010 Accomplishments:</b> Continued improvements to fielded TCM systems to include loadset refinements. <b>FY 2011 Plans:</b> Initiate project to develop capability to determine the state of (or neutralize) Electronic Safe/Arm Fuzes for EOD purpose. <b>FY 2012 Base Plans:</b>					



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>			<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPN/5509: <i>EOD Equipment</i>	5.303	2.000	13.200	0.000	13.200	10.200	10.580	10.162	7.900	0.000	59.345

**D. Acquisition Strategy**

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

**E. Performance Metrics**

Conducted Full Rate Production Decision Review for JEOD Decision Support System (DSS), initiating production. Conducted Interim Progress Review for EOD Future Radiographic System (FRS).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	WR	EODTD:Indian Head, MD	115.241	9.093	Oct 2010	10.041	Oct 2011	1.000	Oct 2011	11.041	Continuing	Continuing	Continuing
Software Development	WR	EODTD:Indian Head, MD	18.434	1.800	Oct 2010	2.000	Oct 2011	0.500	Oct 2011	2.500	Continuing	Continuing	Continuing
ILS	WR	EODTD:Indian Head, MD	42.920	1.750	Oct 2010	1.850	Oct 2011	-		1.850	Continuing	Continuing	Continuing
<b>Subtotal</b>			176.595	12.643		13.891		1.500		15.391			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/CPFF	ITT:Arlington, VA	5.971	0.300	Oct 2010	0.176	Oct 2011	-		0.176	Continuing	Continuing	Continuing
<b>Subtotal</b>			5.971	0.300		0.176		-		0.176			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	EODTD:Indian Head, MD	68.347	2.300	Oct 2010	2.302	Oct 2011	-	Oct 2011	2.302	Continuing	Continuing	Continuing
Operation Test & Evaluation	WR	EODTD:Indian Head, MD	9.633	0.300	Oct 2010	0.300	Oct 2011	-		0.300	Continuing	Continuing	Continuing
<b>Subtotal</b>			77.980	2.600		2.602		-		2.602			

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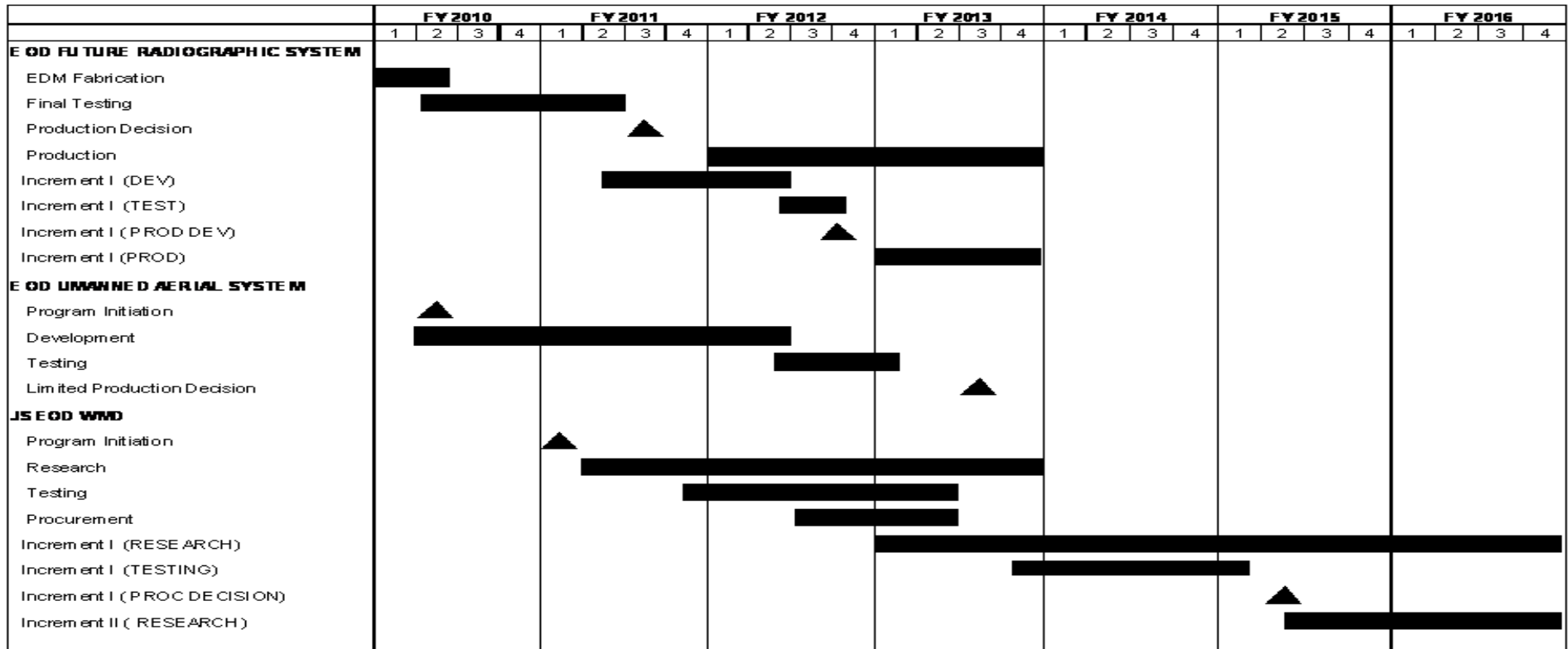
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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>EOD MMH TRANSPORTABLE ROBOTIC SYSTEM</b>																																
Block Upgrade (PROD)	█																															
<b>MUNS (Formerly JLONS)</b>																																
Technology Development	█																															
<b>EOD DECISION SUPPORT SYSTEM</b>																																
Increment I Deployment	█																															
Development Phase																																
Deployment																																
Continuous Improvement	█																															
<b>ELECTRONIC SAFETY ARMFUZE - IED/UXO</b>																																
Program Initiation																																
Development	▲																															
Testing	█																															
Interim Progress Review																																
EDM Fabrication	▲																															
Final Testing	█																															
Production Decision																																
Production	▲																															
<b>TCM, AN/PLT-300 (CLASSIFIED II)</b>																																
Continuous Improvement	█																															

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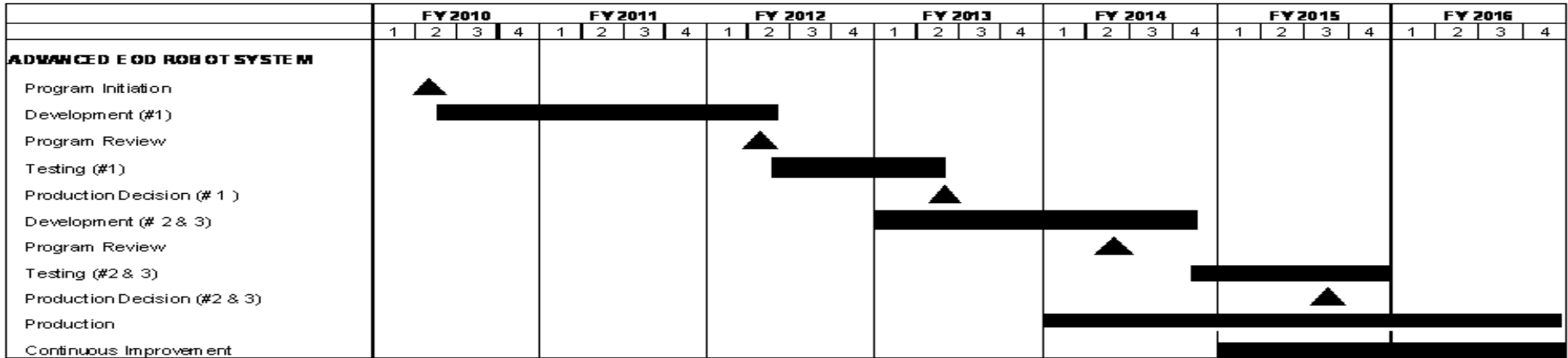
<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ordn Disp System</i>





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0377</b>				
Title: EOD MAN TRANSPORTABLE ROBOTIC SYSTEM	1	2010	3	2010
Block Upgrade (PROD)	1	2010	3	2010
Title: MUNS (Formerly JLONS)	1	2010	4	2012
Technology Development	1	2010	4	2012
Title: EOD DECISION SUPPORT SYSTEM	1	2010	4	2016
Increment I Deployment	1	2010	4	2010
Development Phase 1	1	2011	4	2011
Deployment 1	3	2011	4	2011
Continous Improvement 1	1	2012	4	2016
Title: ELECTRONIC SAFE/ARE FUZE -IED/UXO	1	2010	4	2015
Program Initiation 1	2	2011	2	2011
Development 3	2	2011	3	2012
Testing 1	3	2012	2	2013
Interim Progress Review 1	2	2013	2	2013
EDM Fabrication 1	3	2013	4	2013
Final Testing 1	1	2014	3	2014
Production Decision 1	3	2014	3	2014
Production 1	3	2014	4	2015
Title: TCM, AN/PLT-XXX (CLASSIFIED III)	1	2010	4	2015
Continous Improvement 2	1	2010	4	2015
Title: EOD FUTURE RADIOGRAPHIC SYSTEM	1	2010	4	2013

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
EDM Fabrication 2	1	2010	2	2010
Final Testing 2	2	2010	3	2011
Production Decision 2	3	2011	3	2011
Production 2	1	2012	4	2013
Increment I (DEV)	1	2011	2	2012
Increment I (TEST)	2	2012	3	2012
Increment I (PROD DEV)	3	2012	3	2012
Increment I (PROD)	1	2013	4	2013
Title: EOD UNMANNED AERIAL SYSTEM	1	2010	3	2013
Program Initiation 2	2	2010	2	2010
Development 5	2	2010	2	2012
Testing 3	3	2012	1	2013
Limited Production Decision	3	2013	3	2013
Title: JS EOD WMD	1	2010	4	2016
Program Initiation 3	1	2011	1	2011
Research	2	2011	4	2013
Testing 4	4	2011	2	2013
Procurement	3	2012	2	2013
Increment I (RESEARCH)	1	2013	4	2016
Increment I (TESTING)	4	2013	1	2015
Increment I (PROC DECISION)	2	2015	2	2015
Increment II (RESEARCH)	2	2015	4	2016
Title: ADVANCED EOD ROBOT SYSTEM	1	2010	4	2016
Program Initiation 4	2	2010	2	2010

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 0377: <i>JT Service Expl Ord Disp System</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Development # 1	2	2010	2	2012
Program Review 1	2	2012	2	2012
Testing (#1)	2	2012	2	2013
Production Decision (#1)	2	2013	2	2013
Development (# 2 & 3)	1	2013	4	2014
Program Review 2	2	2014	2	2014
Testing (# 2 & 3)	4	2014	4	2015
Production Decision (# 2 & 3)	3	2015	3	2015
Production 3	1	2014	4	2016
Continous Improvement 3	1	2015	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1317: <i>EOD Diving System</i>	3.371	3.611	3.234	-	3.234	4.496	2.866	2.921	4.955	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides for development of Diver Safety/Life Support Equipment, Advanced Diver Integrated Sensors and Advanced Firing Systems to support Navy Explosive Ordnance Disposal (EOD) underwater operations. The equipment must have inherently low acoustic and magnetic signatures in order to allow the EOD divers to safely approach, render-safe, recover, exploit, and dispose of underwater explosive threats to include sea mines, limpet mines and unexploded ordnance. This project supports the Naval Mine Warfare Certification Plan.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> DIVER SAFETY & LIFE SUPORT SYSTEMS	0.831	0.879	1.759	-	1.759
<b>Articles:</b>	0	0	0		0
<b>Description:</b> Diver Safety & Life Support Systems: Develop diver safety tools to include more capable life support systems for EOD, and Mobile Diving & Salvage Units (MDSU) operations. Specific tools include but are not limited to Underwater Breathing Apparatus (UBA), specialized dive masks, heads-up displays, and emergency life support systems.					
<b>FY 2010 Accomplishments:</b> Developed and tested improvements to the Very Shallow Water (VSW)/EOD UBA to enhance diver safety. Develop and test an EOD system (METRES) to detect and measure EOD diver and MCM equipment influence signatures.					
<b>FY 2011 Plans:</b> Complete testing and gain approval for use for the VSW/MCM UBA. Complete METRES testing.					
<b>FY 2012 Base Plans:</b> Initiate a VSW/MCM UBA program to develop modern and safer UBA. Develop and test UW Lift System for EOD and VSW/MCM missions.					
<b>Title:</b> ADVANCED DIVER INTEGRATED SENSORS	2.090	2.282	1.225	-	1.225
<b>Articles:</b>	0	0	0		0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Description:</b> Develop Advanced Diver Integrated Sensors equipment to enhance EOD and MDSU ability to detect, neutralize and gather intelligence on underwater targets of interest. Requirements include Diver Hull Inspection Navigation System (DHINS) and improvements to the Underwater Imaging System (UIS).</p> <p><b>FY 2010 Accomplishments:</b> Completed system integration and testing of the DHINS final production configuration.</p> <p><b>FY 2011 Plans:</b> Develop and insert mature technologies to the DHINS and UIS as part of a continuous improvement program (CIP) to enhance performance in harsh environments.</p> <p><b>FY 2012 Base Plans:</b> Conduct testing of diver held sensors. As part of a Continuous Improvement Program (CIP) develop and test technologies for integration into DHINS and UIS.</p>					
<p><b>Title:</b> ADVANCED FIRING SYSTEM</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Develops new acquisitions and product improvements to existing systems for below and above water neutralization of underwater threats to support EOD and MDSU operations.</p> <p><b>FY 2010 Accomplishments:</b> Continued system integration and testing of the spiral 2 AFS.</p> <p><b>FY 2011 Plans:</b> Test improvements to the AFS to enhance system effectiveness. Initiate Weapons System Explosives Safety Review.</p> <p><b>FY 2012 Base Plans:</b> Conduct Analysis Of Alternative (AOA). Develop improvements to AFS to increase system performance and capabilities.</p>	0.450 0	0.450 0	0.250 0	-	0.250 0
<b>Accomplishments/Planned Programs Subtotals</b>	3.371	3.611	3.234	-	3.234

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/0977a: <i>Underwater EOD Program (Cost Code UQ034)</i>	2.200	8.900	4.800	0.000	4.800	4.500	1.000	4.000	4.000	0.000	29.400
• 0340: <i>PANMC</i>	0.216	0.000	0.679	0.000	0.679	0.206	2.082	0.000	0.821	0.000	4.004
• OPN/0977b: <i>Underwater EOD Program (Cost Code UQ036)</i>	0.000	0.000	1.200	0.000	1.200	0.000	2.000	1.200	1.200	0.000	5.600

**D. Acquisition Strategy**

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new sub-projects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the sub-projects life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

**E. Performance Metrics**

Research and Develop technologies for the design of Diver Safety Systems, and Advanced Underwater Firing Systems used to render safe, recover, exploit, and dispose of sea limpet mines and unexploded ordnance.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTECHDIV:IH, MD	38.235	0.967	Oct 2010	0.795	Oct 2011	-		0.795	Continuing	Continuing	Continuing
Software Development	WR	EODTECHDIV:IH MD	3.492	0.300	Oct 2010	0.264	Oct 2011	-		0.264	Continuing	Continuing	Continuing
Systems Engineering	WR	EODTECHDIV:IH MD	8.228	-		-		-		-	0.000	8.228	
ILS	WR	EODTECHDIV:IH MD	11.916	-		-		-		-	0.000	11.916	
Systems Engineering	WR	NSWC:Panama City	0.820	0.250	Oct 2010	0.231	Oct 2011	-		0.231	Continuing	Continuing	Continuing
Systems Engineering	WR	SPAWAR:San Diego	1.500	0.500	Oct 2010	0.461	Oct 2011	-		0.461	Continuing	Continuing	Continuing
<b>Subtotal</b>			64.191	2.017		1.751		-		1.751			

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support1	C/CPFF	ITT:Arlington VA	3.537	-		-		-		-	0.000	3.537	
Program Management Support2	C/CPFF	ITT:Arlington VA	2.051	0.430	Oct 2010	0.396	Oct 2011	-		0.396	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
Configuration Management	WR	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
Technical Data	WR	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
GFE	WR	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
Award Fees	WR	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
<b>Subtotal</b>			5.588	0.430		0.396		-		0.396			

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1317</b>				
Title: ADVANCED FIRING SYSTEMS	1	2010	4	2016
System Integration/Testing 1	1	2010	2	2012
System Integration/Testing (Continue)	1	2014	2	2014
Production Decision/ECP Approval1	2	2012	2	2012
Production Decision/ECP Approval (Continue) 1	2	2014	2	2014
Production/Fleet Retrofit 1	1	2010	4	2010
Production/Fleet Retrofit (Continue) 1	2	2012	4	2013
Production/Fleet Retrofit (Continue) 2	2	2014	4	2016
Title: DIVER SAFETY & LIFE SUPPORT	1	2010	4	2016
System Integration/Testing 2	1	2010	2	2014
Systems Integration/Testing (Continue)	1	2015	4	2016
Production Decision/ECP Approval 2	3	2010	3	2010
Production Decision/ECP Approval (Continue) 2	3	2011	3	2011
Production Decision/ECP Approval (Continue) 3	3	2013	3	2013
Production Decision/ECP Approval (Continue)	4	2015	4	2015
Production/Fleet Retrofit (Continue) 3	3	2010	4	2012
Production/Fleet Retrofit (Continue) 4	2	2014	4	2016
Title: ADVANCED DIVER INTEGRATED SENSORS	1	2010	4	2016
System Integration/Testing 3	1	2010	4	2016
Production Decision/ECP Approval (Continue) 4	4	2010	4	2010
Production Decision/ECP Approval (Continue) 5	2	2012	2	2012

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 1317: <i>EOD Diving System</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Decision/ECP Approval (Continue) 6	2	2015	2	2015
Production/Fleet Retrofit 3	1	2010	4	2013
Production/Fleet Retrocit (Continue)	2	2015	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>	-	0.471	-	-	-	-	-	-	-	0.000	0.471
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides for the research, development, for all military services against Radio Controlled Improvised Explosive Devices (RCIED) to prevent initiation. The Navy has been designated as DOD Executive Agent and Single Manager for Military Ground-Based Counter Radio-Controlled Improvised Explosive Electronic Warfare (CREW) Technology by DOD Directive 5101.14 of 11 June 2007, requiring RDT&E to develop capabilities that meet joint requirements. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted and fixed site operations. CREW development to make rapid improvements to performance, supportability and affordability.

\* FY11 funding was incorrectly placed in PE 0603654N. Funds should be in PE 0604653N.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> Joint Counter Radio-Controlled IED Elec Warfare	-	0.471	-	-	-
<b>Articles:</b>		0			
<b>FY 2011 Plans:</b> Provides for the development, testing, and evaluation of Joint CREW modeling and simulation efforts and upgrades to Joint CREW tactical decision aids.					
*FY11 funding was incorrectly placed in PE 0603654N. Funds should be in PE 0604653N.					
<b>Accomplishments/Planned Programs Subtotals</b>	-	0.471	-	-	-

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

N/A

**D. Acquisition Strategy**

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost effective solution over subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included. Procurements across the services will be combined to gain quantity discounts.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>

**E. Performance Metrics**

Gate 6 Milestone B complete 10 Jul 2009; Contract for preliminary design review awarded 01 Oct 2009; Milestone C anticipated Q4 FY11.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4023: <i>VSW MCM/Force Protection UUV</i>	4.745	4.909	12.485	-	12.485	18.304	17.186	12.506	15.682	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides for development of affordable expeditionary, unmanned underwater systems to support Explosive Ordnance (EOD). Mobile Diving and Salvage Units, and Very Shallow Water (VSW) and Underwater Mine Countermeasures (UMCM) mission operations. The equipment must be highly portable in order to support the Navy EOD technician to safely approach, render safe, recover, exploit and dispose of underwater explosive threats to include sea mines, limpet mines and unexploded ordnance. Provides support for the Navy's high priority missions of Maritime Homeland Defense, MCM, including clandestine reconnaissance and mine clearance in support of amphibious operations. Development of EOD UUV systems to support localization render-safe and detailed intelligence gathering of UXO including Underwater Improvised Explosive Devices. This project supports the Naval Mine Warfare Certification Plan.

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

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> VSW MCM/Force Protection UUV	4.745	4.909	12.485	-	12.485
<b>Articles:</b>	0	0	0		0
<p><b>Description:</b> This program supports development, testing and Fleet approval for evolving generations of affordable, expenditionary Unmanned Underwater Vehicles (UUV), support equipment, and common operator interface systems to address validated requirements in support of Explosive Ordnance Disposal and VSW UMCM mission areas. Mission areas include: open and confined areas, hulls, piers and pilings to search, classify, map, re-acquire, identify, and neutralize sea and limpet mines and underwater improvised explosive devices.</p> <p><b>FY 2010 Accomplishments:</b> Continued UUV-N UOES testing. Inserted mature technologies and validate system retrofit upgrades to VSW MCM and BULS UUVs (continuous improvement program (CIP)) to enhance performance in harsh environments in accordance with ONR technology transition agreements (TTAs). Transitioned ONR Hull UUV Localization System (HULS) Rapid Technology Transition initiative. Begun UOES prototype testing and validation of HULS.</p> <p><b>FY 2011 Plans:</b> Continue UUV-N UOES testing and re-validate UUV-N AOA requirements document. Insert mature technologies and validate systems retrofit upgrades to VSW MCM and BULS UUVs CIP to enhance performance in harsh environments in accordance with ONR technology transition agreements (TTAs). Continue UOES testing and</p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
validation of HULS to support requirements re-validation and limited production decision for a preliminary operational capability.					
<b><i>FY 2012 Base Plans:</i></b> Leverage prior UOES testing and ONR Science and Technology (S&T) investments in standoff neutralization capabilities to initiate 1st increment of UUV-Neutralization (UUV-N) program to develop standoff neutralization capabilities to counter naval mines and other underwater explosive threats. Insert mature technologies and validate system retrofit to UMCM UUV systems as incremental capability improvement packages to enhance performance in harsh environments in accordance with CNO/ONR technology transition agreements. Complete HULS validation testing to support fielding of baseline system. Begin development of technology in support of capability upgrades to UUV systems insertion retrofit to HULS and UUV-N systems as the next increment capability improvement package to enhance performance in complex areas of ship hulls, piers and pilings and other certified areas. Continue to develop Common Operator Interface Navy (COIN).					
<b>Accomplishments/Planned Programs Subtotals</b>	4.745	4.909	12.485	-	12.485

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

<b>Line Item</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPN/0977: <i>Underwater EOD Program (Cost Code UQ034)</i>	7.350	1.000	6.271	0.000	6.271	8.574	12.070	14.232	21.997	0.000	71.494

**D. Acquisition Strategy**

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new sub-projects. The AOA addresses and emphasizes acquisitions strategies of the most cost-effective solution over the sub-projects' life -cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modifications), non-developmental item (including modifications), and lastly, developmental programs. Contracting for RDT&E, if required is always competitive and when feasible, production options are included.

This ongoing program capitalizes on a User Operational Evaluation System (UOES) effort involving Fleet operators engaged in tactical experimentation with prototype UUVs prior to fielding baseline systems and capability improvement package increments. These UUV operators also participate in detailed requirements analyses and definition. Operational capabilities with UUV have been realized at designated operational units, with a competitive acquisition strategy. The addition of enhanced capabilities through an evolutionary acquisition approach to the UUV toolbox is programmed for delivery in accordance with approved CNO requirements and ONR TTAs. Further improvements to the toolbox to add basic mine and underwater explosive threats neutralization capabilities will be pursued.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>

**E. Performance Metrics**

Research and Develop technologies for the design of Unmanned Underwater Systems to provide enhanced fleet capabilities to locate, classify, and neutralized mines and unexploded ordnance.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	WR	NSWC, Activities:Not Specified	-	-		1.723	Oct 2011	-		1.723	0.000	1.723	
Systems Engineering	WR	NSWC, Activities:Not Specified	-	-		1.435	Oct 2011	-		1.435	0.000	1.435	
Primary Hardware Development	WR	EODTECHDIV:IH, MD	14.697	1.541	Oct 2010	1.961	Oct 2011	-		1.961	Continuing	Continuing	Continuing
Systems Engineering	WR	EODTECHDIV:IH, MD	10.126	0.900	Oct 2010	1.000	Oct 2011	-		1.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			24.823	2.441		6.119		-		6.119			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/CPFF	ITT:ARLINGTON, VA	3.041	0.600	Oct 2010	1.519	Oct 2011	-		1.519	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.041	0.600		1.519		-		1.519			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NSWC, Activities:Not Specified	-	-		1.792	Oct 2011	-		1.792	0.000	1.792	
Operational Test & Evaluation	WR	NSWC, Activities:Not Specified	-	-		0.300	Oct 2011	-		0.300	0.000	0.300	
Developmental Test & Evaluation	WR	EODTECHDIV:IH, MD	5.396	1.250	Oct 2010	1.382	Oct 2011	-		1.382	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	EODTECHDIV:IH, MD	1.224	0.200	Oct 2010	0.231	Oct 2011	-		0.231	Continuing	Continuing	Continuing
<b>Subtotal</b>			6.620	1.450		3.705		-		3.705			

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>

	FY 2010				FY 2011				FY2012				FY2013				FY2014				FY2015				FY2016			
	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
<b>2ND GENERATION (REQUIRE &amp; ID/BULS)</b> Incremental CIP	█																											
<b>3RD GENERATION (NEUTRALIZATION)</b> UOES Operational Eval System	█																											
Revalidate AOA				▲																								
Requirements Validation Development					█				█				█															
Testing Final																	█											
Production Decision (Limited)																												
<b>4TH GENERATION (SEARCH, CLASSIFY &amp; ID)</b> Test and Evaluation									█																			
Production Retrofit/Decision										▲				▲				▲				▲				▲		
Production Retrofit/Decision																												
Production Retrofit/Decision																												
Production Retrofit/Decision																												
HULS UOES Operational Eval System	█				█																							
Revalidate Requirements									█																			
Testing Final													█															
Production Decision (Limited)										▲																		
<b>INCREMENTAL CIP</b>					█																							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4023</b>				
Title: 2ND GENERATION (rEQUIRE & ID)/BULS	1	2010	2	2010
Incremental CIP1	1	2010	2	2010
Title: 3RD GENERATION (NEUTRALIZATION)	1	2010	3	2015
UOES Operational Eval System 1	1	2010	4	2010
Revalidate AOA	4	2010	4	2010
Requirements Validation	1	2011	4	2011
Development	1	2012	2	2014
Testing Final 1	1	2014	3	2015
Production Decision (Limited) 1	3	2015	3	2015
Title: 4th GENERATION (SEARCH-CLASSIFY & ID)	1	2012	4	2016
Test & Evaluation	1	2012	4	2016
Production/Retrofit Decision1	2	2012	2	2012
Production/Retrofit Decision2	2	2013	2	2013
Production/Retrofit Decision3	2	2014	2	2014
Production/Retrofit Decision4	2	2015	2	2015
Production/Retrofit Decision5	2	2016	2	2016
Title: HULS	1	2010	4	2016
UOES Operational Eval System	1	2010	3	2011
Revalidate Requirements	4	2011	2	2012
Testing Final	4	2011	2	2013
Production Decision (Limited)	2	2012	2	2012

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603654N: <i>JT Service Explosive Ordn Dev</i>	<b>PROJECT</b> 4023: <i>VSW MCM/Force Protection UUV</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
INCREMENTAL CIP	3	2010	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	58.278	52.282	54.783	-	54.783	44.360	62.234	67.430	80.382	Continuing	Continuing
2039: <i>COOP Engagement</i>	54.295	52.282	54.783	-	54.783	44.360	62.234	67.430	80.382	Continuing	Continuing
9999: <i>Congressional Adds</i>	3.983	-	-	-	-	-	-	-	-	0.000	3.983

**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 capable of fire control quality. CEC distributes sensor data from each ship and 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.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP) and Combat System modifications. 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. CEC incorporates Advanced Capability Build-12 (ACB-12) into the CEC baseline for FY09 - FY13.

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, comms independence. SDP will provide hardware which complies with Category 3 Open Architecture Computing Environment (OACE) standards with rehosted existing software, which will be fielded fleet-wide to allow affordable replacement of obsolete computing system components and eliminate dependencies on "closed" equipment, operating systems, and middleware.

Additionally, CEC is working with the Army to engineer a Joint Track Management (JTM) and sensor measurement fusion capability, which will be implemented in their respective programs to achieve interoperability across the battle space.

In regard to SDP Backfit, COMOPTEVFOR found the AN/USG-3 (E-2C Airborne CEC) Operationally Effective, but not Operationally Suitable. Reliability and availability issues are addressed by the replacement of four Weapons replaceable Assemblies (WRAs) with the new SDP. Backfit of the SDP in the E-2C will resolve suitability

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>
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issues and address National Security Agency (NSA) directed Crypto Modernization requirements with funding provided in FY10 and FY11. The SDP will also be used in E-2D.

Large Nets respond to emergent needs of operational forces and missions. Provides an extensible foundation for capability growth. Provides interoperability with legacy units in Global Mode. This will provide a 3X increase in DDS network size. This is needed to improve multiple battle group operations. Applicable ships and systems include all CEC deployed units and future fielding to include CG/DDG Modernization, and its Pathfinder Programs. Data Distribution System (DDS) must increase nodes to enable Joint Network Warfare Capabilities with funding provided in FY10 and FY11.

In support of Interoperability, CEC will work collaboratively with other Combat Systems programs (ACDS, 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 develop the design for the foundational design changes, and provide collaboration for development of other system changes. Develop the long term solutions, including the engineering process to mature those issues, validate small parts of developmental software ideas, and utilize M&S to validate design approaches in the systems engineering realm.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	60.334	52.282	45.559	-	45.559
Current President's Budget	58.278	52.282	54.783	-	54.783
Total Adjustments	-2.056	-	9.224	-	9.224
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.071	-			
• SBIR/STTR Transfer	-1.894	-			
• Program Adjustments	-	-	10.178	-	10.178
• Section 219 Reprogramming	-0.090	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.954	-	-0.954
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Cooperative Engagement Capability Tech Refresh, I*

Congressional Add Subtotals for Project: 9999

	<b>FY 2010</b>	<b>FY 2011</b>
	3.983	-
	3.983	-



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

	<b>FY 2010</b>	<b>FY 2011</b>
Congressional Add Totals for all Projects	3.983	-

**Change Summary Explanation**

Technical: Not Applicable.  
Schedule: Not Applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2039: <i>COOP Engagement</i>	54.295	52.282	54.783	-	54.783	44.360	62.234	67.430	80.382	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**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 capable of fire control quality. CEC distributes sensor data from each ship and 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.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and Combat System modifications. The DDS encodes and distributes ownership 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 is able to process force levels of data in near real-time. This 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. CEC is also incorporating Advanced Capability Build-12 (ACB-12) into the CEC baseline for FY09 - FY13.

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Additionally, CEC is working with the Army to engineer a Joint Track Management (JTM) and sensor measurement fusion capability, which will be implemented in their respective Programs of Record to achieve interoperability across the battle space.

In regard to SDP Backfit, COMOPTEVFOR found the AN/USG-3 (E-2C Airborne CEC) Operationally Effective, but not Operationally Suitable. Reliability and availability issues are addressed by the replacement of four Weapons Replaceable Assemblies (WRAs) with the new SDP. Backfit of the SDP in the E-2C will resolve suitability issues and address National Security Agency (NSA) directed Crypto Modernization requirements with funding provided in FY10 and FY11. The SDP will also be used in E-2D.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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Large Nets respond to emergent needs of operational forces and missions. Provides an extensible foundation for capability growth. Provides interoperability with legacy units in Global Mode. This will provide a 3X increase in DDS network size. This is needed to improve multiple battle group operations. Applicable ships and systems include all CEC deployed units and future fielding to include CG/DDG Modernization, and its Pathfinder Programs. Data Distribution System (DDS) must increase nodes to enable Joint Network Warfare Capabilities with funding provided in FY10 and FY11.

In support of Interoperability, CEC will work collaboratively with other Combat Systems programs (ACDS, 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 develop the design for the foundational design changes, and provide collaboration for development of other system changes. Develop the long term solutions, including the engineering process to mature those issues, 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 2010	FY 2011	FY 2012
<p><b>Title:</b> E-2D</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Completed AN/USG-3B hardware and software integration design and developmental efforts. Commence E-2D AN/USG-3B engineering ground and flight testing leading to Developmental Testing (DT) in FY11.</p> <p><b>FY 2011 Plans:</b> Complete E-2D and AN/USG-3B laboratory and aircraft engineering ground and flight testing. Analyze related data, and develop and implement trouble report corrective actions. Prepare for entry into E-2D AN/USG-3B initial operational testing. Support installation and check out of AN/USG-3B system components into test aircraft supporting NIFC-CA, and prepare for NIFC-CA demonstration events. Continue CEC E-2D software flight testing, leading to early FY12 Operational Evaluation (OPEVAL).</p> <p><b>FY 2012 Plans:</b> Commence preparation for the E-2D and AN/USG-3B initial operational test and provide technical support to that event. Support NIFC-CA demonstration events. Provide analysis, debug and fixes.</p>	<p>3.650</p> <p>0</p>	<p>2.400</p> <p>0</p>	<p>0.500</p> <p>0</p>
<p><b>Title:</b> B/L 2.1 INTEGRATION AND FOT&amp;E TESTING</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued development, integration and testing of computer program Baseline 2.1 for AEGIS and SSDS platforms in support of ACB-12. Performed CEC Developmental Testing (DT) of AN/USG-2A on DDG-51 class, Crypto Modernization software upgrade testing and Engineering Testing (ET) of AN/USG-3 on E-2C.</p> <p><b>FY 2011 Plans:</b></p>	<p>10.200</p> <p>0</p>	<p>14.800</p> <p>0</p>	<p>7.789</p> <p>0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continue development, integration and testing of computer program Baseline 2.1 for AEGIS and SSDS platforms in support of ACB-12. Perform Engineering and Developmental Testing (DT) of AN/USG-3B on E-2D. Perform Operational Testing (OT) of AN/USG-2A on DDG-51 class and Engineering Testing of AN/USG-2B for DDG-51 and CG-47 class. <b>FY 2012 Plans:</b> Continue development, integration and testing of computer program Baseline 2.1 for AEGIS and SSDS platforms. Perform Operational Testing (OT) of AN/USG-3B on E-2D, Engineering and Developmental testing of AN/USG-2B with AEGIS ACB12 Engineering and Developmental testing of CEC as part of NIFC-CA.				
<b>Title:</b> NIFC-CA <b>Articles:</b>		2.080 0	2.080 0	3.390 0
<b>FY 2010 Accomplishments:</b> Completed the design, code and laboratory tests for CEC kernel modifications to support NIFC-CA integration with CEC. <b>FY 2011 Plans:</b> Support NIFC-CA From-The-Sea (FTS) System-of-Systems (SoS) Systems Engineering (SE) leading to tests beginning in FY11. Establish CEC capability at White Sands Missile Range Desert Ship in support of NIFC-CA. <b>FY 2012 Plans:</b> Support NIFC-CA FTS SoS SE leading to FY12 live fire testing. Provide CEC test support, model updates, post test analysis, debug and fix leading to deployable CEC baseline with NIFC-CA capability.				
<b>Title:</b> SYSTEMS ENIGNEERING/INTEGRATION AGENT <b>Articles:</b>		1.612 0	1.662 0	1.712 0
<b>FY 2010 Accomplishments:</b> Continued Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren. <b>FY 2011 Plans:</b> Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren. <b>FY 2012 Plans:</b> Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.				
<b>Title:</b> SYSTEM IMPROVEMENTS		24.327	23.428	30.741

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>		<b>FY 2012</b>
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<b>Articles:</b>	0	0		0
<b><i>FY 2010 Accomplishments:</i></b> Continued CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Cryptologic Modernization, design agent and engineering services.				
<b><i>FY 2011 Plans:</i></b> Continue CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Cryptologic Modernization, design agent and engineering services.				
<b><i>FY 2012 Plans:</i></b> Continue CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Cryptologic Modernization, design agent and engineering services, Common Array Block development.				
<b>Title:</b> JOINT OPERATIONS	1.500	-		1.000
<b>Articles:</b>	0			0
<b><i>FY 2010 Accomplishments:</i></b> Continued participation in system interoperability exercises and Joint Integrated Demonstrations.				
<b><i>FY 2012 Plans:</i></b> Continue participation in system interoperability exercises and Joint Integrated Demonstrations.				
<b>Title:</b> FIELD ACTIVITIES	10.926	7.912		7.441
<b>Articles:</b>	0	0		0
<b><i>FY 2010 Accomplishments:</i></b> Continued field activity support of CEC development efforts (i.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.				
<b><i>FY 2011 Plans:</i></b> Continue field activity support of CEC development efforts (i.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.				
<b><i>FY 2012 Plans:</i></b>				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continue field activity support of CEC development efforts (i.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.			
<b>Title:</b> LINK 16/INTEROPERABILITY	-	-	2.210
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Collaborate Link 16/interoperability efforts with other Combat Systems programs (ACDS, AWS, E-2C, E-2D, SSDS, CDLMS, C2P, and SGS/AC) to develop and analyze impacts of software and implement foundational design corrections and other system changes.			
<b>Accomplishments/Planned Programs Subtotals</b>	54.295	52.282	54.783

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2012</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>						
• Various/OPN: <i>Navy, OPN</i>	50.605	58.110	39.606	0.000	39.606	65.750	60.700	59.692	50.404	Continuing	Continuing
• Various/SCN: <i>Navy, SCN</i>	8.450	17.006	16.367	0.000	16.367	28.994	10.058	18.774	10.457	Continuing	Continuing
• Various/APN: <i>Navy, APN</i>	12.565	16.831	21.057	0.000	21.057	29.479	33.691	33.691	33.691	Continuing	Continuing
• Various/RDTEN: <i>Navy, RDT&amp;E</i>	7.484	1.637	1.300	0.000	1.300	0.000	0.535	0.000	0.000	Continuing	Continuing

**D. Acquisition Strategy**

CEC Acquisition Strategy (AS) was approved by OSD (AT&L) on 19 January 2010. CEC Acquisition Plan was updated April 2010 to incorporate competition into the CEC program.

Contracts:  
Design Agent/Engineering Services - FY10-FY16

**E. Performance Metrics**

- Complete the Build and test of the Signal Data Processor with the Sierra II Crypto Chip.
- Successful completion will result in an Interim Authority to Transmit and NSA full Certification for operation.
- 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.
- Finalize the IFC Kernel development changes and integration with AHE adaptive layer for release 3.
- Continue AEGIS Advance Capability Build-12 (ACB-12) CEC integration and demonstration efforts.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
<ul style="list-style-type: none"><li>- Continue Naval Integrated Fire Control - Counter Air (NIFC-CA) CEC integration and demonstration efforts.</li><li>- Continue E-2D Advanced Hawkeye aircraft CEC integration efforts.</li><li>- Continue Crypto Modernization Tech Refresh efforts.</li></ul>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
AN/USG-2/3 Development	C/CPFF	Raytheon:St. Petersburg, FL	49.157	15.127	Dec 2010	16.441	Dec 2011	-		16.441	Continuing	Continuing	Continuing
AN/USG-2/3 Development/TDA	C/CPFF	JHU/APL:Laurel, MD	32.446	8.000	Oct 2010	8.102	Oct 2011	-		8.102	Continuing	Continuing	Continuing
SI/DA	C/CPAF	General Dynamics:Fairfax, VA	23.979	-		-		-		-	0.000	23.979	
SI/DA	C/CPAF	Award Fees:Not Specified	2.903	-		-		-		-	0.000	2.903	
P3I	C/CPAF	Raytheon:St. Petersburg, FL	11.475	-		-		-		-	0.000	11.475	
DDG 1000	C/CPAF	Raytheon:Massachusetts	10.983	-		-		-		-	0.000	10.983	
DDG 1000	C/CPAF	Award Fees:Not Specified	0.447	-		-		-		-	0.000	0.447	
NIFC-CA Integration	TBD	Various:Not Specified	31.559	2.080	Dec 2010	3.390	Dec 2011	-		3.390	Continuing	Continuing	Continuing
In-Service Engineering Activity	WR	NSWC:Port Hueneme, CA	0.607	0.250	Nov 2010	0.250	Nov 2011	-		0.250	Continuing	Continuing	Continuing
Software Support Activity/SEIA	WR	NSWC:Dahlgren, VA	9.676	1.662	Nov 2010	1.712	Nov 2011	-		1.712	Continuing	Continuing	Continuing
Production Engineering Activity	WR	NSWC:Crane, IN	4.094	1.000	Nov 2010	1.000	Nov 2011	-		1.000	Continuing	Continuing	Continuing
JTRS	TBD	Various:Not Specified	8.500	-		-		-		-	0.000	8.500	
Various	TBD	Miscellaneous:Not Specified	12.119	3.713	Jan 2011	0.449	Jan 2012	-		0.449	Continuing	Continuing	Continuing
NAVSSI	WR	SPAWAR:San Diego, CA	0.368	-		-		-		-	0.000	0.368	
Certification	MIPR	NSA:Fort Meade, MD	0.600	0.250	Nov 2010	0.250	Nov 2011	-		0.250	Continuing	Continuing	Continuing
Certification	WR	SPAWAR:Charleston, SC	0.930	-		-		-		-	Continuing	Continuing	Continuing
Joint Exercises	WR	Various:Not Specified	3.744	-		1.000	Nov 2011	-		1.000	Continuing	Continuing	Continuing
LBTS Testing	WR	CDSA Damneck:Virginia Beach, VA	3.770	1.300	Nov 2010	1.400	Nov 2011	-		1.400	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LBTS Testing	Reqn	SCSC:Wallops Island, VA	3.230	0.700	Nov 2010	0.700	Nov 2011	-		0.700	Continuing	Continuing	Continuing
E-2D Integration	TBD	Various:Not Specified	34.548	2.400	Jan 2011	0.500	Nov 2011	-		0.500	Continuing	Continuing	Continuing
MSI/NCCT	MIPR	Wright Patterson AFB:Dayton, OH	1.228	-		-		-		-	0.000	1.228	
Common Array Block Development	C/CPFF	TBD:Not Specified	-	-		10.800	Dec 2011	-		10.800	0.000	10.800	
<b>Subtotal</b>			246.363	36.482		45.994		-		45.994			

**Remarks**  
 Explanations for the use of "WR, MP, and Reqn" in the "Contract method & type" column are as follows:  
 -When using "MIPR", these documents are issued to DOD activities that are outside of the Department of the Navy.  
 -When using "Reqn" for Wallops Island, this document is used because this is the only document we can provide to the activity to accomplish taskings for the CEC program.  
 -When using "WR", these documents are sent to Navy activities who obligate funding on their vehicles to accomplish tasking for CEC. These activities are the only ones who can accomplish these tasks for the program.  
 -E-2D Integration/NIFC-CA "Various/TBDs" are for classified programs and several document types.

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Need Item Text	C/BA	Not Specified:Not Specified	-	-		-		-		-	0.000	0.000	
<b>Subtotal</b>			-	-		-		-		-	0.000	0.000	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test/ACB-12 Support	C/CPFF	Raytheon:St. Petersburg, FL	0.540	0.794	Dec 2010	-		-		-	Continuing	Continuing	Continuing
Test/ACB-12 Support	C/CPFF	JHU/APL:Laurel, MD	0.080	0.118	Oct 2010	-		-		-	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test Support	WR	NRL:Washington, DC	0.313	-		-		-		-	0.000	0.313	
Test/ACB-12 Support	WR	NSWC:Port Hueneme, CA	11.708	3.900	Oct 2010	1.016	Oct 2011	-		1.016	Continuing	Continuing	Continuing
Air Operations Test Support	WR	NAVAIR (PMA207):Patuxent River, MD	3.664	2.797	Oct 2010	2.400	Oct 2011	-		2.400	Continuing	Continuing	Continuing
Test Data Reduction Analysis	WR	NWAS:Corona, CA	7.218	3.603	Oct 2010	3.368	Oct 2011	-		3.368	Continuing	Continuing	Continuing
Test Support	WR	COMOPTEVFOR:Norfolk, VA	3.689	2.588	Oct 2010	0.005	Oct 2011	-		0.005	Continuing	Continuing	Continuing
Test/ACB-12 Support	WR	NSWC:Dahlgren, VA	-	1.000	Oct 2010	1.000	Oct 2011	-		1.000	0.000	2.000	
<b>Subtotal</b>			27.212	14.800		7.789		-		7.789			

**Remarks**

Explanation for the use of "WR" in the "Contract method & type" column are as follows:

When using "WR", these documents are sent to Navy activities who obligate funding on their vehicles to accomplish tasking for CEC. These activities are the only ones who can accomplish these tasks for the program.

Test support includes funding in support of ACB-12:  
FY11 - \$4M  
FY12 - \$3.9M

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	C/FFP	Booz Allen & Hamilton:Washington, DC	3.310	0.880	Dec 2010	0.880	Dec 2011	-		0.880	Continuing	Continuing	Continuing
Program Management Support	C/FFP	Tech Marine Business:Washington, DC	0.120	0.120	Dec 2010	0.120	Dec 2011	-		0.120	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.430	1.000		1.000		-		1.000			

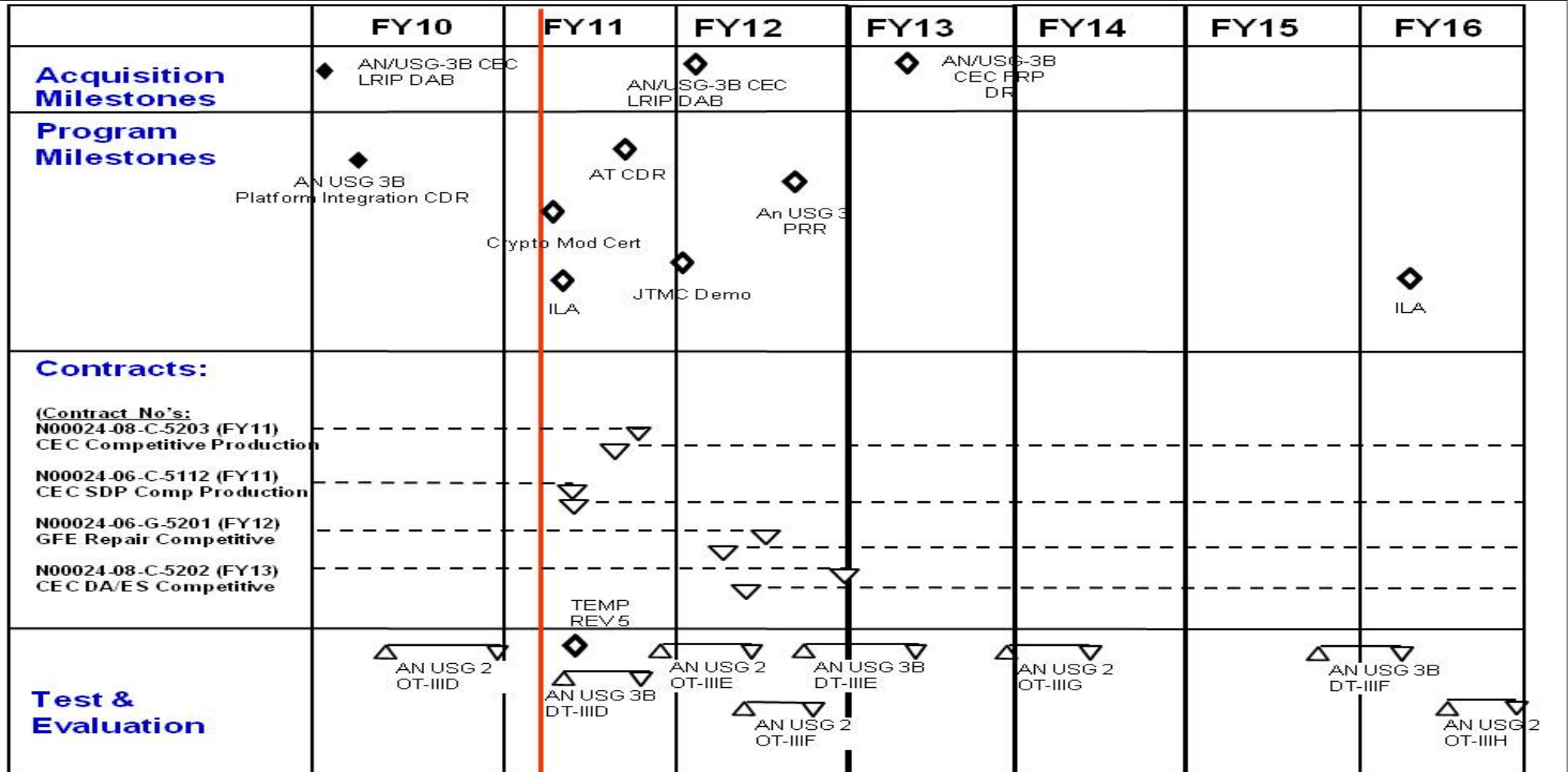
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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 2039: <i>COOP Engagement</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2039</b>				
AN/USG-3B CEC LRIP DAB	1	2010	1	2012
AT CDR	4	2011	4	2011
CRYPTO MOD CERT	2	2011	2	2011
AN/USG-3 PRR	4	2012	4	2012
ILA Event 1	2	2011	2	2011
AN/USG-3B CEC FRP DR	2	2013	2	2013
AN/USG-2 OT-IIIIE	1	2012	3	2012
TEMP (5)	2	2011	2	2011
AN/USG-3 DT-IIID	2	2011	4	2011
JTMC DEMO	1	2012	1	2012
AN/USG-3 DT-IIIE	4	2012	3	2013
AN/USG-2 OT-IIIG	1	2014	3	2014
AN/USG-2 OT-IIIF	3	2012	4	2012
CEC Competitive Production	4	2011	4	2015
CEC SDP Comp Production	2	2011	4	2015
GFE Repair Competitive	2	2012	4	2015
CEC DA/ES Competitive	3	2012	4	2015
AN/USG-3B Platform Integration CDR	2	2010	2	2010
AN/USG-3B DT-IIIF	3	2015	2	2016
AN/USG-2 OT-IIIH	3	2016	4	2016
ILA Event 2	2	2016	2	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603658N: <i>Cooperative Engagement</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	3.983	-	-	-	-	-	-	-	-	0.000	3.983
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add funding will be used for CEC improvements for Crypto Modernization at Raytheon.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Cooperative Engagement Capability Tech Refresh, I	3.983	-
<b>FY 2010 Accomplishments:</b> Continued CEC system improvements including enhanced communications, expansion of capability, and development of system protection/multi-level secure operational-level operations.		
<b>Congressional Adds Subtotals</b>	3.983	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Add.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603713N: <i>Ocean Engineering Tech Dev</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	16.652	13.560	9.996	-	9.996	7.236	7.405	7.574	7.709	Continuing	Continuing
0099: <i>Deep Submergence Bio Med Dev</i>	3.183	3.149	3.507	-	3.507	3.563	3.644	3.721	3.785	Continuing	Continuing
0394: <i>Shallow Depth Diving EQ</i>	13.469	10.411	6.489	-	6.489	3.673	3.761	3.853	3.924	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain underwater operations in the areas of search, location, rescue, recovery, salvage, construction, and protection of offshore assets. This program develops medical technology, diver life support equipment, and the vehicles, systems, tools, and procedures to permit manned underwater operations.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	17.256	13.560	10.251	-	10.251
Current President's Budget	16.652	13.560	9.996	-	9.996
Total Adjustments	-0.604	-	-0.255	-	-0.255
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.604	-			
• Program Adjustments	-	-	-0.234	-	-0.234
• Rate/Misc Adjustments	-	-	-0.021	-	-0.021

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0099: <i>Deep Submergence Bio Med Dev</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0099: <i>Deep Submergence Bio Med Dev</i>	3.183	3.149	3.507	-	3.507	3.563	3.644	3.721	3.785	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project:

- 1) Develops advanced biomedical and bioengineering technology for enhancing medical and life support for submarine escape and rescue;
- 2) Conducts research for diver health, safety and effectiveness; and
- 3) Supports deeper, longer, and more flexible dives.

Deliverables for DISSUB (disabled submarine) include: medical procedures for submarine escape and rescue (including new Submarine Rescue Diving and Recompression System (SRDRS)), life support parameters, medical procedures for life support, exposure guidance for atmospheric contaminants, non-chemical CO2 scrubbing, prevention and treatment of decompression illness, and senior survivor expert decision system.

Deliverables for diver enhancement include: exposure guidance for diver underwater continuous noise, impulse noise, and underwater blast, exposure guidance for oxygen breathing, collection of operational diving depth/time profiles to predict decompression risk, and enhanced underwater swimming efficiency.

Requirements: NAPDD #587-873, Deep Submergence Biomedical Development, 23 November 1999.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Deep Submergence Bio Med Dev - Diver Health and Safety	1.585	1.484	1.764
<b>Articles:</b>	0	0	0
<b>Description:</b> Diver Health and Safety Research: Pulmonary oxygen toxicity exposure limits. Procedures for assessing and mitigating risk for diving in contaminated water. Procedure to determine remaining CO2 scrubber duration. Development of advanced insulation garments for diver thermal protection. Develop guidance for optimizing thermal control during decompression. Continue collection of operational dive profiles for advanced modeling. Novel methods for diver thermal protection. Improve resistance to O2 toxicity. Diver anthropometry. Chemical hardening of diving equipment. Predictive index of visual and auditory O2 toxicity. Guidelines for flying after diving. Guidelines for infra- and ultra-sound diver exposure. Develop an advanced diver thermal model. Electronic collection of operational dive data. Diver sound monitor.			
<b>FY 2010 Accomplishments:</b>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0099: <i>Deep Submergence Bio Med Dev</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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<p>Begin pulmonary oxygen toxicity exposure limits. Survey of long-term health effects of USN Divers. Continue the mechanics of isobaric oxygen pre-breath effectiveness. Screening tests for susceptibility to Immersion Pulmonary Edema (IPE). Continue the effects of exercise and diver's thermal environment on Nitrogen Uptake and Elimination.</p> <p><b>FY 2011 Plans:</b> Continue the pulmonary oxygen toxicity exposure limits. Continue screening tests for susceptibility to Immersion Pulmonary Edema (IPE). Continue the effects of exercise and diver's thermal environment on Nitrogen Uptake and Elimination.</p> <p><b>FY 2012 Plans:</b> N/A</p>			
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<b>Title:</b> Deep Submergence Bio Med Dev - Submarine Rescue	1.598	1.665	1.743
<b>Articles:</b>	0	0	0

<p><b>Description:</b> Submarine Rescue: Decompression procedures for pressurized SRDRS operators. Use of perfluorocarbons to accelerate decompression in submarine rescue. Adjunctive therapies for treating DISSUB survivors. Guidance for food, water, clothing, medical supplies to enhance survival of submarine crews awaiting rescue. Flexible computer generated decompression schedules for wide range of conditions in a DISSUB. Develop DISSUB triage procedures. DISSUB survival trial. Develop oxygen metabolizer for closed vehicles. Treatment guidance for decompression sickness and arterial gas embolism in submarine escape and rescue. Interventions for toxicological problems with rescued submariners. Minimizing decompression sickness and arterial gas embolism with Submarine Escape and Immersion Suit (SEIS) training. Use of pharmacologic agents to reduce decompression risk in submarine rescues. Development of toxic gas analyzer for use in pressurized DISSUB.</p> <p><b>FY 2010 Accomplishments:</b> Continue the Accelerated Decompression for the Submarine Emergency Operating Procedures. Continue the impact of Nitric Oxide Donor in 70Kg Swine Saturation Drop Out. Continue the risk analysis program for pressurized Sub Escape training. Continue Guidance and Protection for Exposure to Underwater Blast. Development of decompression schedule for Submarine Escape and Rescue Using Sheep Model.</p> <p><b>FY 2011 Plans:</b> Continue the Impact of Nitric Oxide Donor in 70KG Swine Saturation Drop Out. Continue development of decompression schedule for Submarine Escape and Rescue Using Sheep Model.</p> <p><b>FY 2012 Plans:</b></p>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0099: <i>Deep Submergence Bio Med Dev</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continue development of decompression schedule for Submarine Escape and Rescue Using Sheep Model. Prediction for DISSUB Rescue using 70KG Swine Dropout Decompression.				
<b>Accomplishments/Planned Programs Subtotals</b>		3.183	3.149	3.507
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> Integrated thrust area teams (e.g., decompression research) are established with university, commercial, and in-house Navy labs to jointly execute biomedical R&D. Peer review of research proposals accomplished by independent Technical Advisory Board. Annual review of progress by Executive Review Board (CNO/NAVSEA/ONR/BUMED). Program management by 0-6 Medical Dept Officer. Contracting by competitive process using BAA and leveraging ONR capabilities.				
<b>E. Performance Metrics</b> Quarterly Program Reviews				



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>	<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>
<b>PROJECT</b> 0099: <i>Deep Submergence Bio Med Dev</i>	

CLASSIFICATION: UNCLASSIFIED		EXHIBIT R-4, SCHEDULE PROFILE																Date: February 2011											
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME																PROJECT NUMBER AND NAME											
RDTE, N / BA 4		0603713N / OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT																0099 / DEEP SUBMERGENCE BIO MED DEV											
FY10		FY10				FY11				FY12				FY13				FY14				FY15				FY16			
		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
FY10 DSBDP R&D Execution		██████████																											
<b>FY11</b> 1) Broad Agency Announcement Published (DSBDP R&D Priorities); 2) Invitation for FY11 Pre-Proposals; and 3) Submission of FY11 Pre-Proposals  1) Request for Full Proposals from Approved Pre-Proposals; and 2) Submission of FY11 Full Proposals  1) Full Proposal Review by DSBDP Technical Advisory Board (TAB); 2) TAB Meets to Prioritize DSBDP FY11 Proposals; 3) Brief Sponsor on TAB Prioritized DSBDP FY11 R&D Program; and 4) Forward Proposal Approval Letters, Navy Lab Guidance Letters  FY11 DSBDP R&D Execution				██	██																								
<b>FY12</b> 1) Broad Agency Announcement Published (DSBDP R&D Priorities); 2) Invitation for FY12 Pre-Proposals; and 3) Submission of FY12 Pre-Proposals  1) Request for Full Proposals from Approved Pre-Proposals; and 2) Submission of FY12 Full Proposals  1) Full Proposal Review by DSBDP Technical Advisory Board (TAB); 2) TAB Meets to Prioritize DSBDP FY12 Proposals; 3) Brief Sponsor on TAB Prioritized DSBDP FY12 R&D Program; and 4) Forward Proposal Approval Letters, Navy Lab Guidance Letters  FY12 DSBDP R&D Execution								██	██																				

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EXHIBIT R-4, SCHEDULE PROFILE

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0099: <i>Deep Submergence Bio Med Dev</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0099</b>				
FY10 DSBDP R&D Execution	1	2010	4	2010
FY11 Broad Agency Announcement Published (DSBDP R&D Priorities)	3	2010	3	2010
Invitation for FY11 Pre-Proposals	3	2010	3	2010
Submission of FY11 Pre-Proposals	3	2010	3	2010
Request for Full Proposals from Approved FY11 Pre-Proposals	3	2010	4	2010
Submission of FY11 Full Proposals	3	2010	4	2010
Full FY11 Proposal Review by DSBDP Technical Advisory Board (TAB)	4	2010	4	2010
TAB Meets to Prioritize DSBDP FY11 Proposals	4	2010	4	2010
Brief Sponsor on TAB Prioritized DSBDP FY11 R&D Program	4	2010	4	2010
Forward FY11 Proposal Approval Letters, Navy Lab Guidance Letters	4	2010	4	2010
FY11 DSBDP R&D Execution	1	2011	4	2011
FY12 Broad Agency Announcement Published (DSBDP R&D Priorities)	3	2011	3	2011
Invitation for FY12 Pre-Proposals	3	2011	3	2011
Submission of FY12 Pre-Proposals	3	2011	4	2011
Request for Full Proposals from Approved FY12 Pre-Proposals	3	2011	4	2011
Submission of FY12 Full Proposals	1	2010	1	2010
Full FY12 Proposal Review by DSBDP Technical Advisory Board (TAB)	4	2011	4	2011
TAB Meets to Prioritize DSBDP FY12 Proposals	4	2011	4	2011
Brief Sponsor on TAB Prioritized DSBDP FY12 R&D Program	4	2011	4	2011
Forward FY12 Proposal Approval Letters, Navy Lab Guidance Letters	4	2011	4	2011
FY12 DSBDP R&D Execution	1	2012	4	2012

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0394: <i>Shallow Depth Diving EQ</i>	13.469	10.411	6.489	-	6.489	3.673	3.761	3.853	3.924	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project is to develop systems to support submarine escape, survivability, rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as, Navy needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. Efforts through FY14 focus on the Submarine Rescue Diving and Recompression System (SRDRS) to provide a new rapidly deployed emergency submarine rescue capability. SRDRS provides a new capability of pressurized transportation of rescuees from a stricken submarine directly to the decompression system replacing the Deep Submergence Rescue Vehicles and Mother Submarines. SRDRS includes an air transportable rapid Assessment/Underwater Work System (AUWS), a Pressurized Rescue Module (PRM) or Rescue Capable System (RCS), and a Submarine Decompression System (SDS). The AUWS is in service and supports clearing disabled submarine seating surfaces, delivery of emergency life support stores, and disabled submarine assessment. The Submarine Rescue System-Rescue Capable System (SRS-RCS) completed OPEVAL in FY08 and is rescue ready. The Submarine Rescue System-Submarine Decompression System (SRS-SDS) is scheduled for IOC in FY14. The SRDRS will provide a global rapid response capability to support submarine rescue missions with an increase in capability at a fraction of the cost of the currently available systems.

Shallow Depth Diving Equipment managed under SEA00C - This project develops systems to support submarine escape and rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as Navy, needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. R&D will be performed in the areas of contaminated water diving, diver thermal protection, and diver sound protection.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Shallow Depth Diving EQ - SRDRS	12.213	9.246	5.273
<b>Articles:</b>	0	0	0
<b>Description:</b> Continue design, fabrication, and acceptance testing of the prototype Submarine Decompression System and support equipment. Continue integration of all SRDRS components.			
<b>FY 2010 Accomplishments:</b> Continued design/development/fabrication of Submarine Decompression System Primary Elements including: Submarine Decompression Chamber 1 and 2 repairs and modifications; Pressurized Flexible Manway 1, 2, and 3; Deck Transfer Lock; Gas Rack fabrication; and Mission and Auxiliary Support Equipment. Performed Submarine Decompression Chamber 1 and 2 developmental testing. Completed Gas Rack material audit and plan to complete Gas Rack developmental testing.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>		<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continued design/development/fabrication of Submarine Decompression System Primary Elements including: Submarine Decompression Chamber 1 and 2 repairs and modifications; Pressurized Flexible Manway 1, 2, and 3; Deck Transfer Lock; and Mission and Auxiliary Support Equipment. Plan to complete material audits for Deck Interconnects and Modified Transfer Lock. Plan to perform developmental testing for Deck Interconnects, Submarine Decompression Chambers 1 and 2, and Pressurized Flexible Manway 1 and 2.  <b>FY 2012 Plans:</b> Continued design/development/fabrication of Submarine Decompression System Primary Elements including: Submarine Decompression Chamber 1 and 2 repairs and modifications; Pressurized Flexible Manway 3; Deck Transfer Lock; and Mission and Auxiliary Support Equipment. Plan to complete material audits for Submarine Decompression System Ship Interface Template Sets, Pressurized Flexible Manway 3, Deck Transfer Lock, Submarine Decompression Chambers 1 and 2, and Morgan Breathing System 2000. Plan to perform developmental testing for Modified Transfer Lock, Ship Interface Template Sets, Pressurized Flexible Manway 3, Morgan Breathing System 2000, and the Deck Transfer Lock.					
<b>Title:</b> Shallow Depth Diving EQ - Diving			1.256	1.165	1.216
			0	0	0
<b>Description:</b> Continue research on contaminated water diving and research on diver thermal protection and CO2 monitors, and diver sound protection.  <b>FY 2010 Accomplishments:</b> Continued research on contaminated water diving, diver thermal protection, CO2 monitors, and diver sound protection. Continued the research on prototype diver cooling system. Commenced research on validation of air and oil monitors.  <b>FY 2011 Plans:</b> Continue research on contaminated water diving, CO2 monitors, and diver sound protection. Continue research on the prototype diver cooling system. Continue research on validation of air and oil monitors.  <b>FY 2012 Plans:</b> Continue research on contaminated water diving, diver thermal protection, CO2 monitors, and diver sound protection. Continue the research on prototype diver cooling system. Continue research on validation of air and oil monitors.			<b>Articles:</b>		
<b>Accomplishments/Planned Programs Subtotals</b>			13.469	10.411	6.489

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>

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

N/A

**D. Acquisition Strategy**

The Submarine Rescue system (SRS) segment of the SRDRS is largely based on the use of Commercial-Off-the-Shelf (COTS) technology and maximum use of Non-Developmental Items (NDI). The SRS segment is being procured using performance based specifications. Many of the SRS contracts were awarded competitively and were based on technical capability and cost considerations (best value). Program management of SRDRS is accomplished through the use of Program Executive Officer, Submarines (PEO SUB) leadership. This change was enacted in February 2003 realigning the responsibility from SEA00C to PEOSUB. The Prototype system provides full operational capability and no additional procurement is planned. The system is designed to be Government Owned/Commercially Operated/Commercially Maintained (GO/CO/CM).

**E. Performance Metrics**

Quarterly Program Reviews and Critical Design Reviews.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Pressurized Rescue Module System (PRMS)	C/CPIF	Oceanworks:Ontario, Canada	23.824	-		-		-		-	0.000	23.824	
PRMS	C/FFP	Oceanworks:Ontario, Canada	4.150	-		-		-		-	0.000	4.150	
Systems Engineering - Design, Integration	C/CPAF	Oceaneering:Hanover, MD	17.978	3.177	Oct 2010	1.597	Oct 2011	-		1.597	Continuing	Continuing	Continuing
Systems Engineering - Technical	Various	Various:Various	0.537	-		-		-		-	Continuing	Continuing	Continuing
Systems Engineering - Design, Integration	C/CPAF	Oceaneering:Hanover, MD	-	1.986	Jan 2011	0.934	Jan 2012	-		0.934	0.000	2.920	
Systems Engineering - Design, Integration	C/CPAF	Oceaneering:Hanover, MD	-	2.145	Apr 2011	1.078	Apr 2012	-		1.078	0.000	3.223	
Systems Engineering - Design & Integration	C/CPAF	Oceaneering:Hanover, MD	-	0.635	Sep 2011	0.320	Sep 2012	-		0.320	0.000	0.955	
<b>Subtotal</b>			46.489	7.943		3.929		-		3.929			

**Remarks**  
1. Oceaneering is the prime for SRDRS Transfer Under Pressure (TUP) capability; scheduled for IOC in FY14.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development Support	Various	Various:Various	3.656	1.150	Oct 2010	1.208	Oct 2011	-		1.208	Continuing	Continuing	Continuing
Integrated Logistics Support	Various	Various:Various	0.841	-		-		-		-	Continuing	Continuing	Continuing
Configuration Management	C/CPAF	Oceaneering:Hanover, MD	0.489	-		-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			4.986	1.150		1.208		-		1.208			

**Remarks**  
Items citing various are issued to multiple government activities to be placed on contract vehicles. Contract competitions for these efforts are in process.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various:Various	3.187	-		-		-		-	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	COMOPTEVFOR:Norfolk, VA	0.525	0.050	Oct 2010	0.050	Oct 2011	-		0.050	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.712	0.050		0.050		-		0.050			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	QBS/Various:Richmond BC, Canada/Various	0.074	-		-		-		-	Continuing	Continuing	Continuing
Government Engineering Support	WR	NFESC:Port Hueneme, CA	0.197	-		-		-		-	Continuing	Continuing	Continuing
Government Engineering Support	WR	PSNSY/ Various:Bremerton, WA/Various	2.120	0.077	Oct 2010	0.075	Oct 2011	-		0.075	Continuing	Continuing	Continuing
Government Engineering Support	Various	Various:Various	1.859	-		-		-		-	Continuing	Continuing	Continuing
Program Management Support	Various	Perot:Washington, DC	2.110	-		-		-		-	Continuing	Continuing	Continuing
Travel	Various	NAVSEA:Washington, DC	0.474	0.115	Oct 2010	0.108	Oct 2011	-		0.108	Continuing	Continuing	Continuing
SBIR Assessment	Various	Various:Various	0.443	-		-		-		-	Continuing	Continuing	Continuing
Acquisition Workforce	Various	Various:Various	0.021	-		-		-		-	Continuing	Continuing	Continuing
Program Management Support	Various	Various:Various	-	0.430	Oct 2010	0.448	Oct 2011	-		0.448	0.000	0.878	
Program Management Support	Various	Various:Various	-	0.269	Jan 2011	0.280	Jan 2012	-		0.280	0.000	0.549	
Program Management Support	Various	Various:Various	-	0.377	Apr 2011	0.391	Apr 2012	-		0.391	0.000	0.768	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>
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<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Subtotal</b>			7.298	1.268		1.302		-		1.302			

**Remarks**  
Items citing various are due to contract competitions in process.

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	62.485	10.411		6.489		-		6.489			

**Remarks**

**APPROPRIATION/BUDGET ACTIVITY**

1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0603713N: Ocean Engineering Tech Dev

**PROJECT**

0394: Shallow Depth Diving EQ

# SRDRS Acquisition Transfer Under Pressure

Based on IMS Baseline Rev 13 July 2010,  
Government Fiscal Year utilized

**SRS ACQUISITION MILESTONES**

**DESIGN/DEVELOPMENT**

- SDS Primary Elements
  - SDC 1 & 2 Repairs & Modifications
  - PFMS 1, 2 (SRR, PRD, CDR Presented)
  - PFM 3 (SRR & PDR Presented)
  - DTL (CDR Presented)
  - SDS Gas Rack (CDR Presented)
  - SDS MSE & AE
    - MBS 2000 Base Unit Upgrade
    - SDS Deck Interconnects (54)
    - SDS Templates (SDS SITS)
    - MTL 1 & 2 Mods & Base SITS

**CONFIGURATION AUDITS**

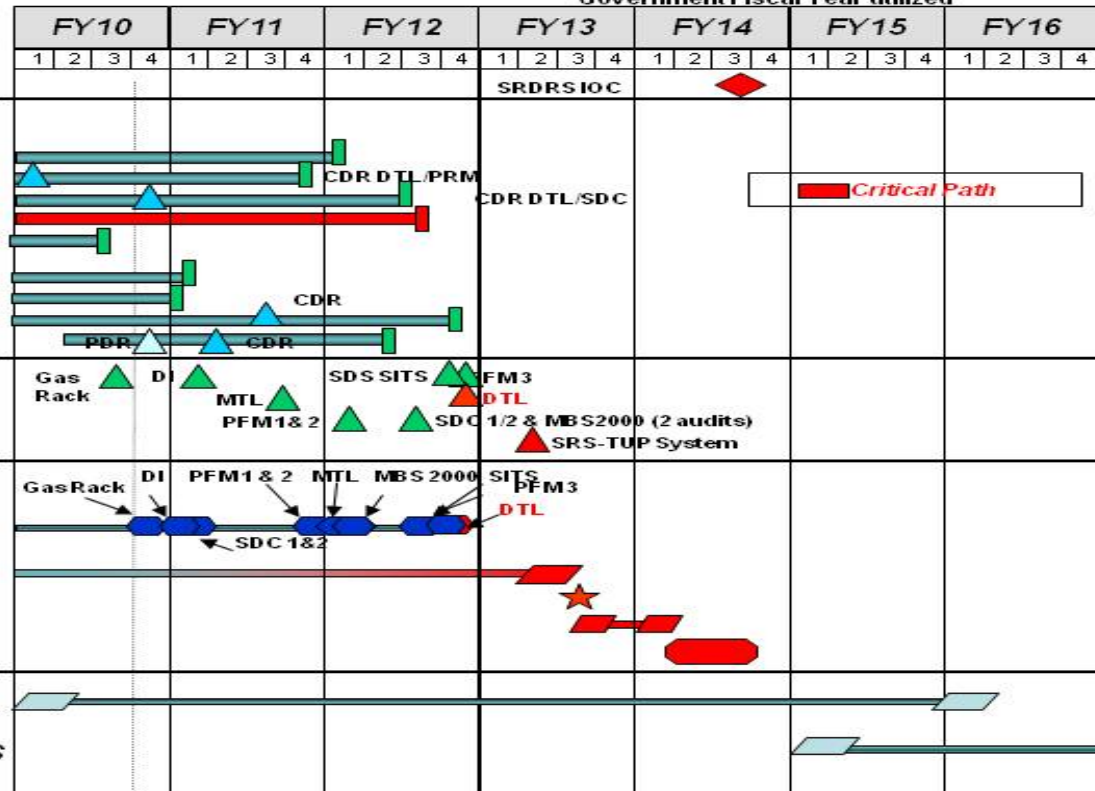
- Material Audits (PCAs)
- System Integration Audits (FCAs)

**T&E MILESTONES**

- Developmental Testing
  - (1) SDS Element Testing
- Integration & Sea Trials Testing
  - (1) SDS Element Integration @ Oil Ship to DSU
  - (2) SRS System Integration @ DSU
- OPEVAL & ORE

**POST DELIVERY SHAKEDOWN**

**PREPLANNED PRODUCT IMPROVEMENTS (RCS+TUP)**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0394</b>				
Acquisition Milestones	1	2010	4	2016
SRDRS IOC	3	2014	3	2014
Design & Production-SDS Primary Elements	1	2010	4	2012
SDC 1 & 2 Repairs & Modifications	1	2010	1	2012
PFMS 1 & 2 (SRR, PDR, CDR Presented)	1	2010	4	2011
PFM 3 (SRR & PDR Presented)	1	2010	3	2012
DTL (CDR Presented)	1	2010	3	2012
SDS Gas Rack (CDR Presented)	1	2010	3	2010
SDS MSE & AE	1	2010	4	2012
MBS 2000 Base Unit Upgrades	1	2010	1	2011
SDS Deck Interconnects (54)	1	2010	1	2011
SDS Templates (SDS SITS)	1	2010	4	2012
MTL 1 & 2 Mods & Base SITS	2	2010	2	2012
Configuration Audits	3	2010	2	2013
Material Audits (PCAs)	3	2010	4	2012
System Integration Audits (FCAs)	2	2013	2	2013
T&E Milestones	1	2010	3	2014
Developmental Testing (SDS Elements)	1	2010	4	2012
Integration & Sea Trials Testing	1	2010	3	2014
SDS Element Integration @ OII	1	2010	3	2013
Ship to DSU	3	2013	3	2013

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603713N: <i>Ocean Engineering Tech Dev</i>	<b>PROJECT</b> 0394: <i>Shallow Depth Diving EQ</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SRS System Integration @ DSU	3	2013	1	2014
OPEVAL & ORE	1	2014	3	2014
Post Delivery Shakedown	1	2010	2	2016
Preplanned Product Improvements (RCS & TUP)	1	2015	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.707	20.207	21.714	-	21.714	21.923	22.592	23.048	23.282	Continuing	Continuing
0401: <i>Shipboard Waste Mgmt</i>	5.683	5.911	7.705	-	7.705	7.707	8.054	7.942	7.779	Continuing	Continuing
0817: <i>Environmental Sustainability Development (NESDI)</i>	5.718	5.995	5.845	-	5.845	5.919	6.089	6.313	6.509	Continuing	Continuing
9204: <i>Marine Mammal Research</i>	8.509	8.301	8.164	-	8.164	8.297	8.449	8.793	8.994	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797

**A. Mission Description and Budget Item Justification**

Many environmental laws, regulations, and policies impose restrictions on Navy vessels, aircraft, and facilities that interfere with operations and/or increase the cost of operations. The Navy must be able to conduct its national security mission in compliance with applicable environmental requirements in the U.S. and abroad without compromising performance, safety, or health, while simultaneously minimizing the cost of compliance. This program develops and evaluates processes, hardware, systems, and operational procedures that will allow the Navy to operate in U.S., foreign, and international waters, air, space, and land areas while complying with environmental laws, regulations, Executive Orders, policies and international agreements. The projects for this program element support the Navy's compliance with the (a) Clean Water Act, (b) Act to Prevent Pollution from Ships, (c) International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), (d) DoD 4715.6 R1, Regulations on Vessels Owned or Operated by the Department of Defense, (e) OPNAVINST 5090.1B (CH-4), Environmental and Natural Resources Program Manual, (f) 40 CFR Part 9 and Chapter VII (Uniform National Discharge Standards [UNDS] Phase I Standard), (g) Executive Order (EO) 13148, Greening the Government Through Leadership in Environmental Management, (h) Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, (i) National Invasive Species Act of 1996, (j) 33 CFR 151 Subpart D-Ballast Water Management for Control of Nonindigenous Species in Waters of the United States, (k) Clean Air Act, (l) Federal Insecticide, Fungicide, and Rodenticide Act, (m) Executive Order (EO) 13423 Strengthening Federal Environmental, Energy, and Transportation Management of 24 January, 2007, (n) NAVSEANOTE 5400, NAVSEA Warranted Technical Authorities, (o) NAVSEAINST 5400.97B, Virtual SYSCOM Engineering and Technical Authority Policy, (p) NSWCCD-63-TM-2005/9, Clean Ballast Engineering Analysis Phase II, (q) Northwest Environmental Advocates v. EPA, No. 03-05760, Order Granting Plaintiffs' Motion for Permanent Injunctive Relief at 18 (N.D. Cal. Sept. 18, 2006), (r) Environmental Requirements and Goals for Navy Systems Acquisition, CNO (N4) Memorandum 5090 Ser N4/5U890259 of 20 April 2005, (s) International Convention for the Control and Management of Ships' Ballast Water and Sediments, 31 Feb 2004. References (a) through (m) establish Level I environmental protection requirements for Navy shipboard systems, operations, and discharges in the areas of liquid wastes, hazardous materials, solid wastes, and other significant afloat environmental concerns. References (n) and (o) establish NAVSEA Technical Authority responsibilities for Ship Environmental Engineering. Project 0401 supports RDT&E efforts that enable Navy ships and submarines to comply with laws, regulations, and policies in six major areas: (1) Liquid Wastes, (2) UNDS Rulemaking, (3) Hazardous Materials and Pollution Prevention, (4) Hull Antifouling Paints, (5) Technical Authority, and (6) Ballast Water Exchange Improvements. An FY10 new start, Ballast Water Exchange Improvements, will provide engineering solutions for managing ballast water discharges to mitigate the transport and release of non-indigenous species. Project 0817 supports RDT&E to develop and validate technologies to enable Navy facilities to comply

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>
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with environmental laws, regulations, and policies in a cost-effective manner. Project 9204 supports RDT&E to develop planning and monitoring tools for minimizing Fleet contacts with and potential harassment (physiological and behavior) of marine animals including threatened and endangered species in response to Federal laws and regulations and public scrutiny.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	21.372	20.207	22.790	-	22.790
Current President's Budget	20.707	20.207	21.714	-	21.714
Total Adjustments	-0.665	-	-1.076	-	-1.076
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.511	-			
• Program Adjustments	-	-	-0.533	-	-0.533
• Section 219 Reprogramming	-0.153	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.543	-	-0.543
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Compliance Tools Development for Metals in Antifouling Paints*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	0.797	-
	0.797	-
	0.797	-

**Change Summary Explanation**

Technical: Not applicable.  
Schedule: Not applicable.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0401: <i>Shipboard Waste Mgmt</i>	5.683	5.911	7.705	-	7.705	7.707	8.054	7.942	7.779	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Navy ships and submarines must routinely operate in U.S., international, and foreign waters, and visit numerous U.S. and foreign ports. No body of water is without environmental restrictions that impact the movements and operations of Navy vessels. Environmental requirements tend to be most restrictive in port and in coastal waters, where the Navy's increasing littoral presence places ships and submarines in discharge-restricted waters for longer periods of time. Growing international cooperation in addressing global environmental concerns is resulting in expanding areas of ocean considered environmentally susceptible, where special prohibitions on ship discharges and operations are imposed. Navy vessels must comply with applicable environmental legal requirements while maintaining continued access to all waters for operations, exercises, training, and port access. The large crews and limited on-board space of Navy ships and submarines severely constrain their ability to hold wastes for return to port for shore side disposal. The Shipboard Waste Management RDT&E project evaluates and develops shipboard environmental equipment, systems, technologies, processes, and practices to comply with environmental laws, regulations, Executive Orders, international agreements, foreign-country requirements, and DoD and Navy policies. The project focuses on providing engineering criteria, design guidance, and performance specifications for selecting, procuring, installing, integrating, and operating environmental equipment and systems on Navy ships and submarines, and on defining and developing processes, procedures and logistics support requirements. Environmental equipment, systems, processes and practices must meet legal environmental requirements and be reliable, maintainable and achievable at sea, and impose no or low manning burden. Environmental equipment and systems must meet Navy-unique shipboard requirements (performance, space, weight, shock, vibration, electromagnetic compatibility, manning, automation, etc.), incorporate integrated logistics support, minimize life-cycle cost, and include validated acquisition, design, installation, and operating documentation. Shipboard processes and practices must be feasible and must be compatible with ship and submarine operational, maintenance, manning, habitability, health, and safety requirements. It also addresses afloat environmental issues other than shipboard wastes, e.g., access to environmental data for planning Fleet operations and exercises. The Shipboard Environmental Protection Branch (SEA 05P25) is the designated Technical Warrant Holder for Environmental Systems & Materials Engineering, with responsibility and accountability for ensuring that ships and submarines are designed and upgraded, and can be operated, in compliance with existing and anticipated environmental requirements while minimizing total ownership cost and manning. This responsibility encompasses legacy platforms and new vessel designs, as well as Fleet operations exercises, and training.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Technical Authority	1.650	2.029	2.505
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
Developed environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and performed test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities. Performed technology assessments, laboratory evaluations,			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>shipboard evaluations, and point designs for oil pollution abatement, non-oily wastewater, solid waste and ballast water systems/equipment.</p> <p><b>FY 2011 Plans:</b> Continue developing environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities.</p> <p><b>FY 2012 Plans:</b> Continue developing environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities.</p>				
<p><b>Title:</b> Integrated Liquid Wastes</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued to support rule making process in development of Uniform National Discharge Standards (UNDS). Continued development of marine pollution control device (MPCD) treatment systems, technologies and procedures, and evaluation of commercial off-the-shelf (COTS) wastewater systems. Conducted laboratory evaluation and ship impact feasibility study of parallel plate/microfiber element coalescing oil-water separator system used on LCS-1 Class ships. Completed characterization study of vacuum, collection, holding, and transfer (VCHT) collected blackwater on DDG-51 Class ships.</p> <p><b>FY 2011 Plans:</b> Continue support rulemaking process in development of UNDS. Continue development of MPCD treatment systems, technologies and procedures, and evaluation of COTS wastewater systems.</p> <p><b>FY 2012 Plans:</b> Continue support rulemaking process in development of UNDS. Continue development of MPCD treatment systems, technologies and procedures, and evaluation of COTS wastewater systems.</p>		2.988 0	2.762 0	2.900 0
<p><b>Title:</b> Hazardous and Other Major Ship Wastes</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continued development and testing of new low/no-copper</p>		0.647 0	0.748 0	1.100 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
underwater hull antifouling coatings. Performed Technical Toluene, Xylene and Naphthalene substitution/reduction efforts through the Planned Maintenance System (PMS). Evaluated the cost savings associated with long-life fluorescent bulbs. <b>FY 2011 Plans:</b> Continue shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Complete development and testing of new low/no-copper underwater hull antifouling coatings. <b>FY 2012 Plans:</b> Continue shipboard hazardous materials substitution and elimination process, and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines.				
<b>Title:</b> Common Systems Assessment, Evaluation and Specification <b>Articles:</b>		-	-	0.200 0
<b>FY 2012 Plans:</b> Conduct testing of commercial off-the-shelf (COTS) equipment to gain additional information in support of new acquisition program decisions and equipment replacement programs for in-service ships. Candidate systems will be evaluated at two stages. The first stage is a written assessment of the ability to meet life cycle cost goals and technical, operational, and performance standards based on design drawings and manufacturer provided performance data. The second stage is laboratory testing of candidate systems down-selected from the first stage. This is a new start in FY 2012.				
<b>Title:</b> Ballast Water Exchange <b>Articles:</b>		0.398 0	0.372 0	1.000 0
<b>FY 2010 Accomplishments:</b> Conducted surveys of Expeditionary Warfare ships to explore feasible engineering enhancements reduce the time and/or and manpower involved in executing ballast water double exchange. Developed and documented double exchange procedures and guidance procedures and prepared documentation and training materials for the new ballast water management guidance. Investigated ballasting data logging options. Prepared a ballast water exchange guidance document, identified factors that complicate ballast water exchange operations, and executed a single-exchange efficacy study. <b>FY 2011 Plans:</b> Continue ballast water double exchange surveys and procedural product development on Expeditionary Warfare ships. <b>FY 2012 Plans:</b>				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continue ballast water double exchange surveys and procedural product development on Expeditionary Warfare ships.			
<b>Accomplishments/Planned Programs Subtotals</b>	5.683	5.911	7.705

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTEN/0601153N: <i>Defense Research Sciences</i>	397.181	429.767	434.899	0.000	434.899	447.160	469.627	489.434	510.567	0.000	3,178.635

**D. Acquisition Strategy**

RDT&E Contracts are Competitive Procurements.

**E. Performance Metrics**

Quarterly Program Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Ancillary Hardware Development	Various	Misc. Contracts:Not Specified	19.149	-		-		-		-	0.000	19.149	Continuing
Primary Hardware Development	C/CPFF	Oceaneering:Not Specified	1.000	-		-		-		-	0.000	1.000	Continuing
Systems Engineering	C/CPFF	John J. McMullen & Son:Not Specified	4.487	-		-		-		-	0.000	4.487	Continuing
<b>Subtotal</b>			24.636	-		-		-		-	0.000	24.636	

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Software Development	WR	SPAWAR:Charleston, SC	10.838	-		-		-		-	0.000	10.838	Continuing
<b>Subtotal</b>			10.838	-		-		-		-	0.000	10.838	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	MIPR	US Army Corps of Engineers:Norfolk, VA	-	0.687	Feb 2011	0.701	Feb 2012	-		0.701	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD:Bethesda, MD	169.844	4.684	Nov 2010	6.718	Nov 2011	-		6.718	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NRL,Wash,DC:Wash,DC	30.429	0.232	Dec 2010	-		-		-	0.000	30.661	
Developmental Test & Evaluation	WR	SPAWARSYSCEN:SD,CA	11.841	0.111	Nov 2010	0.113	Nov 2011	-		0.113	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	Misc. Govt Labs:TBD	22.928	0.047	Nov 2010	-		-		-	0.000	22.975	
	C/CPFF	SAIC:San Diego, CA	15.570	-		-		-		-	0.000	15.570	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													
Developmental Test & Evaluation	C/CPFF	Misc. Contracts:TBD	12.963	0.140	Feb 2011	0.143	Feb 2012	-		0.143	Continuing	Continuing	Continuing
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons:Arlington, VA	6.547	-		-		-		-	0.000	6.547	Continuing
Developmental Test & Evaluation	C/CPFF	ONR:Arlington, VA	0.400	-		-		-		-	0.000	0.400	Continuing
Developmental Test & Evaluation	WR	Naval Postgraduate School:Monterey, CA	1.800	-		-		-		-	0.000	1.800	Continuing
Process Control Engineering	MIPR	EPA, Hdqtrs:Washington, DC	0.840	-		-		-		-	0.000	0.840	Continuing
<b>Subtotal</b>			273.162	5.901		7.675		-		7.675			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAVSEA HQ:Washington, DC	0.300	0.010	Nov 2010	0.030	Nov 2011	-		0.030	0.000	0.340	Continuing
SBIR Assessment	TBD	Not Specified:Not Specified	0.078	-		-		-		-	0.000	0.078	Continuing
<b>Subtotal</b>			0.378	0.010		0.030		-		0.030	0.000	0.418	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		309.014	5.911	7.705	-	7.705		

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016			
	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
<b>Integrated Liquid Wastes</b>																												
Uniform National Discharge Standards (UNDS) Rulemaking																												
Develop & Evaluate Marine Pollution Control Device Systems & Technologies																												
Evaluate Commercial Non-Oily Wastewater Treatment Systems																												
<b>Hazardous and Other Major Ship Wastes</b>																												
Hazardous Materials and Pollution Prevention																												
Low /No-Copper Hull Antifouling Coatings																												
<b>Technical Authority</b>																												
<b>Ballast Water Exchange</b>																												
<b>Common Systems Assessment, Evaluation &amp; Specification</b>																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0401: <i>Shipboard Waste Mgmt</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0401</b>				
Uniform National Discharge Standards (UNDS ) Rulemaking	1	2010	4	2016
Develop & Evaluate Marine Pollution Control Device Systems & Technologies	1	2010	4	2016
Evaluate Commercial Wastewater Treatment Systems	1	2010	4	2016
Hazardous Materials and Pollution Prevention	1	2010	4	2016
Low/No-Copper Hull Antifouling Coatings	1	2010	4	2011
Technical Authority	1	2010	4	2016
Ballast Water Exchange	1	2010	4	2015
Common Systems Assessment, Evaluation and Specification	1	2012	4	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0817: <i>Environmental Sustainability Development (NESDI)</i>	5.718	5.995	5.845	-	5.845	5.919	6.089	6.313	6.509	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Inherent to the realization of the vision outlined in Sea Power 21 are certain environmental consequences that will, to a lesser or greater degree, be an impact on the Navy's ability to fully achieve the strategy outlined in the Navy Capability Pillars (NCP) SEA SHIELD, SEA STRIKE, SEA BASING and FORCENet and the supporting initiatives of SEA WARRIOR, SEA TRIAL and SEA ENTERPRISE. Readiness and training are primary considerations for determining whether any fighting force is at its peak proficiency. The ability to train our forces in a realistic environment is paramount. Today's reality requires training and operating within environmental constraints (national and international laws and agreements), and searching for alternatives to comply with and alleviate those constraints. Moreover, as we develop new systems and technologies in support of Sea Power 21, the Navy must anticipate potential environmental regulations which, while not currently an issue, could in the future adversely impact our ability to project and sustain our forces at home and abroad.

This program identifies pervasive Navy shoreside environmental requirements and develops and validates information, new processes, and technologies that address requirements that pose significant impact on Naval shore activities in complying with environmental laws, regulations, orders, and policies. The goal of the program is to maximize opportunities for significant cost savings while minimizing personnel liabilities, operational costs, and regulatory oversight and preserving or enhancing the ability of Naval shore activities to accomplish their required missions and functions in support of the Navy's transformational strategy. Program investments supports 4 of 5 Environmental Enabling Capabilities (EEC-2 through 5) that are required to meet the objectives of Sea Power 21 as detailed in the POM08 Integrated Navy Environmental Readiness Capability Assessment for Science and Technology (S&T) and Development, test and Evaluation (DT&E).

**EEC-2 MAXIMIZE TRAINING AND TESTING RANGE REQUIREMENTS WITHIN ENVIRONMENTAL CONSTRAINTS:**

This capability addresses environmental impacts and restrictions at Navy land and sea ranges, including munitions testing and manufacturing, to ensure Navy ranges are available to conduct required training and testing operations for the Fleet. Investments in EEC-2 provide validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test ranges to maximize the availability and utilization of the ranges. The results support operational readiness by providing the tools and technologies necessary for sustaining and managing Navy land and sea ranges related to unexploded ordnance (UXO) and munitions, encroachment, air quality, airborne noise, water quality, and wetlands. Capabilities gained include the ability to assess and determine the risks from underwater UXO, the evaluation and prioritization ordnance contaminated sites for evaluation in environmental programs, and the implementation of range specific best management practices by evaluating and modeling available process, procedures, and technologies.

**EEC-3 PLATFORM MAINTENANCE AND REPAIR WITH MINIMAL ENVIRONMENTAL FOOTPRINT:**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>
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This capability focuses on minimizing or eliminating environmental impact related to Navy and Marine Corps weapon system repair and maintenance operations. Investments in EEC-3 provide valid knowledge, models, process, and technologies to minimize regulated emissions, discharges and hazardous material usage during the repair and maintenance of ships, submarines, and surface/sub-surface vehicles and aircraft and air vehicles. The program supports Fleet operational readiness and Navy acquisition communities by investing in information to understand emerging environmental requirements and to develop innovative processes and technologies that result in savings while reducing the fleet environmental constraints related to platform maintenance. Capabilities and benefits gained include, but are not limited to, the reduction in the usage of heavy metals used in metal finishing (chromium and cadmium), reduced hazardous air pollutant (HAP) emissions, and the development of best management practices and tools to minimize the use of hazardous materials and the generation of hazardous wastes associated with maintaining and repairing ships, submarines and aircraft and unmanned vehicles. Results of program investments will be leveraged across weapon system and platform acquisition to ensure continued reduction in lifecycle costs and long-term environmental compliance burdens to the Fleet.

**EEC-4. SUPPORT SHORE READINESS WITHIN ENVIRONMENTAL CONSTRAINTS:**

Naval shore establishment requires the capability to operate and maintain facilities and provide waterfront and airfield services to the fleet while complying with applicable environmental regulations and minimizing environmental impacts and costs. The program invests in knowledge and innovative processes and technologies that minimize infrastructure and operational costs, regulated emissions, while minimizing discharges and hazardous material usage from ship (waterfront) and aviation operations. Capabilities and benefits gained under EEC-4 include reduced costs associated with wastewater treatment, elimination/reduction in the use of HAPs, ozone depleting substances (ODSs), and volatile organic compounds (VOCs), and the associated reporting requirements, reduced hazardous waste and disposal costs, and improved storm water management.

**EEC-5. COST-EFFECTIVE MANAGEMENT OF ENVIRONMENTAL REGULATORY REQUIREMENTS:**

The environmental compliance regulations require base managers to permit, monitor and report on many processes associated with weapon system and platform operations. Naval shore environmental managers require the capability to efficiently and cost effectively manages these compliance requirements. Under EEC-5, the program invests in improved data collection, methods, and models to assess environmental impacts and ecological risk assessments of Naval Operations on harbors, U.S. waterways, and surrounding communities. Benefits include gaining standardized technical environmental management improvements/techniques related to source control, assessment, and monitoring. EEC-5 also provides validated knowledge, models, processes and technologies to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Title:</b> Maximize Training &amp; Testing Requirements Within Environmental Constraints</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Completed the analysis of the long term disposition of seafloor cables which will identify cable impacts to the marine environments aiding the sustainment and</p>	2.072	2.171	1.960
	0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>management of Navy underwater ranges and support new underwater surveillance systems that require the laying of seafloor hardware and cables. Completed the analysis of the environmental effects of lasers on biota in the marine environment. Continued the validation of forensic approaches to perchlorate natural and anthropogenic source identification at Navy ranges.</p> <p><b>FY 2011 Plans:</b> Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Continued effort to assess environmental risk associated with abandoned equipment in underwater ranges. Continued the validation of forensic approaches to perchlorate natural and anthropogenic source identification at Navy ranges. Continue abandoned equipment effects at Nay ranges. Initiated BMJP DEM/VAL for mitigation of environmental impacts from venting of full scale practice bombs at Navy ranges.</p> <p><b>FY 2012 Plans:</b> Continue providing validated knowledge, models, and processes to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Conclusion of the risk assessment associated with abandoned equipment in underwater ranges. Background Perchlorate Source Characterization at Navy Facilities and Ranges.</p>				
<p><b>Title:</b> Maintenance</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft. Completed aircraft sustainment related projects. Developed dry dock best management practices and decision selection tool assisting naval shipyards, stations and bases in meeting the copper discharge standards will conclude. Alternative solvents demonstrations for ship maintenance operations and identification of alternatives for NAVSEA targeted chemicals continued. The development of hazardous material allocation information for ship maintenance continued. Completed acid waste treatment project for cleaning shipboard heat exchangers.</p> <p><b>FY 2011 Plans:</b> Divest investments in EEC3 related to aircraft sustainment. Continue development of dry dock cleaning alternatives. Continue hull bio-fouling cleaning and removal technology. Tools/mitigation measures for coating operations on vessel freeboard areas. Elimination of Overspray in Shipbuilding and Facilities Maintenance Operations.</p> <p><b>FY 2012 Plans:</b> Continue all aviation sustainment related projects. Continue development of dry dock cleaning alternatives. Complete hull bio-fouling cleaning and removal technology. Continue hull bio-fouling cleaning and removal technology. Continue the elimination</p>		0.787 0	0.848 0	0.820 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
of overspray in shipbuilding and facilities maintenance operations. Initiate effort to develop tools/mitigation measures for coating operations on vessel freeboard areas.				
<b>Title:</b> Support Shore Readiness within Environmental Constraints				
<b>Articles:</b>		2.465 0	2.473 0	2.228 0
<b>FY 2010 Accomplishments:</b> Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continued selected demonstrations of alternative solvents for industrial operations. Continued the development of a wastewater treatment system to collect and treat the waste stream for vertical launch missile tubes. Dry dock best management practices tool will assist naval shipyards, naval stations, and submarine bases in meeting the copper discharge standards for NPDES and Stormwater discharges.				
<b>FY 2011 Plans:</b> Integrating effort related to Shipboard Acid Waste Treatment Technology. This pier-side reclamation system separates heavy metal and marine fouling sludge to allow ship waste water to meet local sanitary sewer discharge limits. Validate a Shipboard Mobile Surface Cleaning Technology. Validation of a mobile surface cleaning technology for critical cleaning of shipboard non-skid and shoreside surfaces to remove contaminants, mitigate pollution from weather deck and stormwater runoff and reduce associated manpower and waste management burden. Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, and other base operations. Reduced Generation of Shoreside Managed Waste from Pierside Supported Underwater Ship Husbandry Operations.				
<b>FY 2012 Plans:</b> Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support and aviation support operations. Initiate Hull maintenance issues mitigation measures.				
<b>Title:</b> Cost-Effective Management of Environmental Regulatory Requirements				
<b>Articles:</b>		0.394 0	0.503 0	0.837 0
<b>FY 2010 Accomplishments:</b> Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Abiotic In Situ Treatment of 1,2,3-Trichloropropane to Protect Drinking Water Resources. Continue improved vapor assessment strategies for vapor intrusion. Continued DEM/VAL of Automated Condition Assessment of Coral Reefs at Guam Apra Harbor. Finalizing Metals removal from stormwater runoff using linear treatment system at San Diego. Initiate waste to energy alternatives in				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>San Diego/Miramar. Initiated resuspension of dredged sediments from prop wash and beneficial reuse of navigational dredge material.</p> <p><b><i>FY 2011 Plans:</i></b> The Potable Water Quality Management Guidance Document which provides Navy drinking water program managers with the direction and information for meeting compliance goals contained in the new disinfection byproducts rules. Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Continue effort to establish guidelines &amp; limitations for the Use of Biodiesel with Ground Tactical Vehicles. Maximize the use of biodiesel fuels in tactical vehicles and equipment. Continue demonstrating technology for vapor intrusion assessment, coral reef health assessments, dredge sediment resuspension modeling, beneficial reuse of dredged material, and waste to clean energy completion.</p> <p><b><i>FY 2012 Plans:</i></b> Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Reduce Contaminant Transport Associated with Stormwater Runoff. Continue efforts related to Navy contribution to climate change and regulatory requirements.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	5.718	5.995	5.845

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

N/A

**D. Acquisition Strategy**

This project is categorized as Non-ACAT (Non Acquisition). This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for Naval stations and other mission funded activities costing over \$100K are often procured directly through the base operating budget. Equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over \$100K are procured through their Capital Purchases Program (CPP). For both types of activities, equipment products costing less than \$100K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all the critical stakeholders: 1) Fleet end user; 2) Funding sponsor for the Navy end user; 3) Other stakeholders with cognizance over the Navy process or operation being changed, 4) Cognizant environmental federal, state, and local regulators; and 5) The private or government organization that will produce the product.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>

**E. Performance Metrics**

Quarterly Budget Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EEC 2	Various	NFESC:PT HUENEME, CA	1.242	0.500	Sep 2011	0.637	Sep 2012	-		0.637	0.000	2.379	Continuing
EEC 2	Various	SSC:SAN DIEGO, CA	1.621	1.250	Sep 2011	1.046	Aug 2012	-		1.046	Continuing	Continuing	Continuing
EEC 2	Various	NSWC:BETHESDA, MD	0.296	0.421	Sep 2011	0.355	Sep 2012	-		0.355	0.000	1.072	Continuing
EEC 3	Various	NAWC:PATUXENT RIVER, MD	0.519	0.300	Aug 2011	0.255	Aug 2012	-		0.255	0.000	1.074	Continuing
EEC 3	Various	NSWC:BETHESDA, MD	1.886	0.348	Sep 2011	0.355	Aug 2012	-		0.355	0.000	2.589	Continuing
EEC 4	Various	NFESC:PT HUENEME, CA	3.811	0.700	Jul 2011	0.587	Jul 2012	-		0.587	0.000	5.098	Continuing
EEC 4	Various	NSWC:BETHESDA, MD	0.588	0.923	Feb 2011	0.905	Jun 2012	-		0.905	0.000	2.416	Continuing
EEC 5	Various	SSC:SAN DIEGO, CA	0.705	-		-		-		-	0.000	0.705	Continuing
EEC 5	Various	NFESC:PT HUENEME, CA	0.631	0.200	Mar 2011	0.255	Apr 2012	-		0.255	0.000	1.086	Continuing
EEC 3a	Various	NSWC:BETHESDA, MD	1.019	-		-		-		-	0.000	1.019	Continuing
EEC 5	Various	NSWC:BETHESDA, MD	0.215	0.200	Feb 2011	0.316	Jun 2012	-		0.316	0.000	0.731	Continuing
EEC 4a	Various	SSC:SAN DIEGO, CA	0.860	0.850	Mar 2011	0.724	Jul 2012	-		0.724	0.000	2.434	Continuing
EEC 5	Various	NAWC:PATUXENT RIVER, MD	0.223	0.103	Jul 2011	0.255	Jul 2012	-		0.255	0.000	0.581	Continuing
EEC 3b	Various	NSWC:BETHESDA, MD	-	0.200	Aug 2011	0.155	Sep 2012	-		0.155	0.000	0.355	Continuing
<b>Subtotal</b>			13.616	5.995		5.845		-		5.845			

**Remarks**

Performing Activities: Naval Surface Warfare Center, Carderock Division (NSWC/CD), Naval Facilities Engineering Service Center (NFESC/MD), Naval Surface Warfare Center, Indian Head Division (NSWC/Bethesda MD), Space and Warfare Systems Center, San Diego (SSC/SC), Naval Air Warfare Center, Patuxent River (NAWC/PAX)  
 Total Prior Years Cost: Summation starts with FY08. Subtotal does not include performing activities from prior years that are no longer performing activities.  
 Award Dates: About 55% of the project is executed via contracts awarded by the performing activities.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2012 Navy</b>							<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>			<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>			
	<b>Total Prior Years Cost</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
<b>Project Cost Totals</b>	13.616	5.995	5.845	-	5.845				

**Remarks**



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>

FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

<b>Proj 0817</b>	
EEC 2	
EEC 3	
EEC 4	
EEC 5	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 0817: <i>Environmental Sustainability Development (NESDI)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 0817</i></b>				
EEC 2	1	2010	4	2016
EEC 3	1	2010	4	2016
EEC 4	1	2010	4	2016
EEC 5	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9204: <i>Marine Mammal Research</i>	8.509	8.301	8.164	-	8.164	8.297	8.449	8.793	8.994	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Navy has been and will continue to be subject to litigation with regard to the potential injuring and killing of marine animals by the use of intense underwater sound. Since Fleet operation and training areas coincide with known or probable marine mammal habitats, migration routes, or breeding areas, the possibility exists that such incidents are likely to continue in the future. The increasing public interest and pressure has resulted in escalating Fleet costs. For example, Fleet and SYSCOM development activities have been interrupted, modified, or altogether cancelled and environmental regulations have, among other things, required new ship construction shock trials to obtain Federal permits and conduct extensive environmental planning that can take several years to complete. The incorporation of mitigation measures in Fleet training operations to minimize the potential adverse effects on protected marine animals can significantly reduce the realism of these operations. In addition, the testing, evaluation, and deployment of new sonar detection and monitoring systems that use active acoustics are under intense public scrutiny for their potential adverse effects on whales and other marine mammals. Navy needs scientific evidence to substantiate its claims of limited or inconsequential adverse effects to marine life from operations.

This project primarily focuses on the development of planning, monitoring, and mitigating tools to aid the Fleet in minimizing contact with and the potential harassment of protected marine animals during operations, exercises, training, and undersea surveillance and weapons testing. These new capabilities will encompass historical and newly acquired data and analytical models that together can predict marine animal habitats (where they are likely to be) and their natural and expected behavior (diving patterns, prey localization, calling activity, etc.). This project consists of three major areas that will help ensure Navy compliance with the Marine Mammal Protection Act (MMPA).

These areas are (1) Mammal Demographics - Determine the likelihood of the presence of marine mammal species during observed and forecast oceanographic conditions by developing habitat and ecological models. Refine marine mammal survey techniques to optimize the accuracy of abundance estimates in small ocean regions of Navy interest.

Conduct analysis of long range, low frequency marine mammal vocalizations to determine natural variations in population estimates, residency, and migration routes over large ocean regions; (2) Criteria, Thresholds, and Mitigation - Establish criteria and thresholds from which to measure potential impact on marine mammals from Navy training

operations. Determine the effectiveness and usefulness of various mitigation measures in relation to the potential impact of Navy operations on marine mammals; and (3) Passive Acoustic Monitoring - Conduct Passive Acoustic Monitoring of Marine Mammals, particularly on Navy undersea ranges. Several feasibility demonstrations reveal the potential of passive acoustic monitoring as a unique form of mitigation and a special tool to obtain critical information about normal marine mammal behavior. Any impact of Navy operations on marine mammals, particularly behavior modification, will be derived after normal variations in marine mammal behavior resulting from natural factors are determined. Several remaining unknowns must be addressed before passive acoustic monitoring techniques are developed as an institutionalized system available to the Fleet.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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Accurate and timely monitoring and predicting the movement of whales and other protected marine animals plus an enhanced knowledge of how marine animals may react to Fleet activities (e.g., physiological and behavioral effects) will reduce Navy interaction with these animals; minimize the risk that legally-imposed monitoring and avoidance measures will adversely affect Fleet operations and exercises; minimize the substantial costs associated with operations, exercises, and tests that have to be modified or curtailed as a result of concerns about protected marine animals; and will reduce the likelihood of litigation related to actual or anticipated compliance problems with protected animals.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Marine Mammal Location, Abundance and Movement</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys. Produced new estimates of the abundance of blue and humpback whales to extend the 15-year time series and determined whether populations are continuing to increase and recover from whaling.</p> <p><b>FY 2011 Plans:</b> Continue investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys.</p> <p><b>FY 2012 Plans:</b> Continued research on integrated ecosystems; sensor and tag development; marine mammal diving and stress physiology, and the population structure of beaked whales in the vicinity of Navy training ranges.</p>	<p>2.206</p> <p>0</p>	<p>1.965</p> <p>0</p>	<p>2.283</p> <p>0</p>
<p><b>Title:</b> Criteria and Thresholds, Physiology and Behavior, and Effects of Sound</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops. Developed a model to predict the behavioral responses of individual beaked whales to sonar that will assess the level of take that is likely as a result of sonar operations, provide sufficient information to allow the energetic costs of disturbance by sonar to be estimated, and a modeling framework within which information concerning behavioral responses of beaked whales can be interpreted.</p> <p><b>FY 2011 Plans:</b></p>	<p>2.030</p> <p>0</p>	<p>2.055</p> <p>0</p>	<p>1.914</p> <p>0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Continue investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat.</p> <p><b>FY 2012 Plans:</b> Continued research to determine what constitutes biologically significant behavioral response to Navy-generated sound on individuals with respect to disruption of natural behavior patterns, ascertaining the short and long-term effects of such disruptions and documenting avoidance behaviors.</p>				
<p><b>Title:</b> Mitigation Methodologies: Monitoring, New Technology, and Risk Assess</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness. Supported Navy ASW training activities at SCORE (San Clemente Island) by mitigating the effects of mid-range sonar on marine mammals.</p> <p><b>FY 2011 Plans:</b> Continue mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness.</p> <p><b>FY 2012 Plans:</b> Continued research to determine the observation, detection and classification measures required to develop effective monitoring and mitigation procedures. Focus to improve marine mammal monitoring capabilities over current methods by developing new and adapting existing technology.</p>		3.440 0	3.380 0	3.090 0
<p><b>Title:</b> Acoustic Source Propagation</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources. Designed and fabricated a Terfenol-D Power Wheel transducer array that can be used to provide high power transmissions in the water in the frequency band that encompasses both the SQS-53C and SQS-56 system bands of operation.</p> <p><b>FY 2011 Plans:</b></p>		0.833 0	0.901 0	0.877 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.			
<b><i>FY 2012 Plans:</i></b> Continued research on developing protocols and models for predicting how sound energy (from a wide range of Navy sources) propagates in water.			
<b>Accomplishments/Planned Programs Subtotals</b>	8.509	8.301	8.164

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• RD TEN/0601153N: <i>Defense Research Sciences</i>	397.181	429.767	434.899	0.000	434.899	447.160	469.627	489.434	510.567	0.000	3,178.635
• RD TEN/0602435N: <i>Ocean Warfighting Environment Applied Research</i>	47.098	49.491	50.093	0.000	50.093	50.854	52.051	53.475	54.695	0.000	357.757
• RD TEN/0602782N: <i>Mine &amp; Expeditionary Warfare Applied Research</i>	39.652	36.833	34.600	0.000	34.600	39.714	45.332	53.426	59.488	0.000	309.045
• RD TEN/0603235N: <i>Common Picture Advanced Technology</i>	98.618	96.720	53.728	0.000	53.728	48.226	52.897	46.345	40.536	0.000	437.070

**D. Acquisition Strategy**  
(U) RDT&E Contracts are Competitive Procurements.

**E. Performance Metrics**  
Quarterly Program Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NUWC:Newport, RI	3.248	1.375	Nov 2010	1.465	Nov 2011	-		1.465	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	SEA Inc:California	0.680	0.285	Nov 2010	0.295	Dec 2011	-		0.295	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NPGS:Monterey, CA	1.930	0.465	Nov 2010	0.465	Dec 2011	-		0.465	Continuing	Continuing	Continuing
Developmental Test & Evaluation	MIPR	NOAA Fish Science Center:California	1.230	0.770	Nov 2010	0.785	Dec 2011	-		0.785	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	Scripps Institute:California	5.483	1.690	Nov 2010	1.521	Dec 2011	-		1.521	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	Oregon State Univ.:Oregon	0.865	0.341	Nov 2010	0.341	Dec 2011	-		0.341	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	Woods Hole Oceanographic Inst:Massachusettes	1.301	0.600	Nov 2010	0.600	Dec 2011	-		0.600	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	SPAWAR:San Diego, CA	1.332	0.175	Nov 2010	0.179	Nov 2011	-		0.179	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	Cascadia:Cascadia, WA	0.290	1.120	Nov 2010	0.992	Dec 2011	-		0.992	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NOAA Fish Science Center:Massachusettes	0.140	0.260	Nov 2010	0.270	Dec 2011	-		0.270	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NOSSA:Indian Head, MD	0.485	0.375	Nov 2010	0.375	Nov 2011	-		0.375	Continuing	Continuing	Continuing
Developmental Test & Evaluation	SS/CPFF	San Diego State Univ.:San Diego, CA	0.771	0.530	Nov 2010	0.541	Dec 2011	-		0.541	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	St. Andrews Univ.:Scotland	0.030	0.240	Nov 2010	0.260	Dec 2011	-		0.260	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	CNAF:San Diego, CA	1.240	0.075	Nov 2010	0.075	Nov 2011	-		0.075	Continuing	Continuing	Continuing
<b>Subtotal</b>			19.025	8.301		8.164		-		8.164			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				

**Remarks**  
The planned execution strategy is based on the assumption that a formal appropriations bill has been signed into law near the end of the of the fiscal year. This strategy provides sufficient time for field activities receiving funds to obligate funds on contracts w/industry and academia, who are an integral component towards execution of Marine Mammal Research.

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	19.025	8.301		8.164		-		8.164			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016							
	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				
Marine Mammal Location, Abundance and Movement																																
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound																																
Mitigation Methodologies: Monitoring, New Technologies and Risk Assessment																																
Acoustic Source Propagation																																

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9204: <i>Marine Mammal Research</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 9204</i></b>				
Marine Mammal Location, Abundance, and Movement	1	2010	4	2016
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	1	2010	4	2016
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1	2010	4	2016
Acoustic Source Propagation	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603721N: <i>Environmental Protection</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add

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

<b><i>Congressional Add:</i></b> Compliance Tools Development for Metals in Antifouling Paints	FY 2010	FY 2011
	0.797	-
<b><i>FY 2010 Accomplishments:</i></b> Develop a bioavailability model for copper in estuarine and marine waters, and potential alternative bioavailability-based sediment cleanup targets for metal contaminants, to support environmentally protective use of copper-based antifouling coatings on seagoing ships, and develop more site-specific, and thus cost-effective and achievable sediment cleanup targets for metals at Navy and other DoD sites.		
<b>Congressional Adds Subtotals</b>	0.797	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Add

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603724N: <i>Navy Energy Program</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	18.643	30.403	70.538	-	70.538	67.267	74.091	89.296	53.279	Continuing	Continuing
0829.: <i>ENERGY CONSERVATION (ADV)</i>	3.795	19.579	17.405	-	17.405	9.960	10.151	11.639	13.568	Continuing	Continuing
0838: <i>Mobility Fuels (ADV)</i>	4.371	10.824	15.888	-	15.888	14.987	13.881	13.885	12.382	Continuing	Continuing
0928: <i>Directed Energy Research</i>	-	-	13.404	-	13.404	16.290	16.079	19.813	3.266	Continuing	Continuing
0929: <i>Aircraft Energy Conservation</i>	-	-	23.841	-	23.841	26.030	33.980	43.959	24.063	Continuing	Continuing
9999: <i>Congressional Adds</i>	10.477	-	-	-	-	-	-	-	-	0.000	10.477

**A. Mission Description and Budget Item Justification**

This program supports projects to evaluate, adapt, and demonstrate energy related technologies for Navy aircraft and ship operations to: (a) increase fuel-related weapons systems capabilities such as range and time on station; (b) reduce energy costs; (c) apply energy technologies that improve environmental compliance; (d) relax restrictive fuel specification requirements to reduce cost and increase availability worldwide; (e) provide guidance to fleet operators for the safe use of commercial grade or off-specification fuels when military specification fuels are unavailable or in short supply; and (f) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems. This program supports the achievement of legislated, White House, Department of Defense, and Navy Energy Management Goals. It also responds to direction from the Office of the Secretary of Defense, the Secretary of the Navy, and the Chief of Naval Operations to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	18.918	30.403	33.750	-	33.750
Current President's Budget	18.643	30.403	70.538	-	70.538
Total Adjustments	-0.275	-	36.788	-	36.788
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.248	-			
• Program Adjustments	-	-	37.291	-	37.291
• Section 219 Reprogramming	-0.026	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.503	-	-0.503
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project:** 9999: *Congressional Adds*

    Congressional Add: *Alt and Renew Energy Prog - Cong*

    Congressional Add: *Solar Heat Reflective Film for Energy Efficiency*

    Congressional Add: *Molten Carbonate Fuel Cell Demonstrator*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	2.988	-
	3.904	-
	3.585	-
Congressional Add Subtotals for Project: 9999	10.477	-
Congressional Add Totals for all Projects	10.477	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule:

0829.L19 - becomes new PU 0929 in FY12.

0829.S24 - Land Based Testing, Determine Fuel and Maintenance Saving, Shipboard Evaluation and Component Implementation schedules have all been delayed due to prototype development.

0838- schedule changes reflect consolidation of Aircraft Fuels and Ship Fuels Accomplishments to single area of Naval Tactical Fuels Accomplishments.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603724N: *Navy Energy Program*

0928 - Direct Energy Research efforts begin in FY12.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>				<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0829.: <i>ENERGY CONSERVATION (ADV)</i>	3.795	19.579	17.405	-	17.405	9.960	10.151	11.639	13.568	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Energy Conservation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. The aircraft energy conservation project identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the project is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

The Energy Conversation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This Fleet driven project, managed through NAVSEA 05Z, will identify mature potential energy saving and maintenance improvement areas, by involvement with Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEOs, TMA/TMI, Industry, and Academia. Potential technology target areas will include: Hull Hydrodynamics, Hull Husbandry, Heating, Ventilation & Air Conditioning (HVAC) Systems, Thermal Management, Propulsion Systems, Electrical Systems, and Power Generation and Storage systems. The project directly supports Fleet requirements to reduce energy consumption and lower maintenance costs. The project will focus on research and development across the following major areas: (U) Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers and/or hull appendages to determine overall mission and cost effectiveness of these improvements. (U) Hull Husbandry Sub Project - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both landbased and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency. (U) HVAC Sub Projects - Project funds will be utilized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements. (U) Thermal Management Sub Project - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC. (U) Propulsion Systems Sub Project - Project funds will be utilized to identify requirements and perform landbased and ship board testing of ship propulsion system improvements, on Gas Turbine, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs and to develop a ship-wide monitoring system capable of conveying the power usage and operating conditions of numerous systems on the ship (U) Electrical Systems Project - Project funds will be utilized to identify requirements and perform landbased and ship board testing of ship electrical system improvements, to reduce overall fuel consumption and lower maintenance costs. (U) Power Generation & Storage System Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall effectiveness of these improvements. (U) Smart Voyage Planning (SVPDA)/ Fleet Scheduler - Analytic software tools for shore-side planning (1) to design ship voyage routes that minimize fuel usage using ship fuel curves, local weather, and ocean-current data, and (2) allow Fleet schedulers to develop mission plans for movement of Ships using minimized fuel usage as a primary focus, while (3) accounting for personnel and ship safety.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Aircraft Energy Conservation	-	12.943	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>			0	
<b>FY 2011 Plans:</b> Complete evaluation of F414 engine efficiency technologies. Complete evaluation of drag-resistant aircraft coatings. Initiate feasibility of increased F/A-18 aircraft bring-back weight study. Evaluate advance engine efficiency technologies. Initiate air vehicle energy-saving technologies study. Upgrade mission planning modules.				
<b>Title:</b> Power Generation and Storage Project		0.196	0.202	2.119
<b>Articles:</b>		0	0	0
<b>Description:</b> Power Generation & Storage System Sub Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements				
<b>FY 2010 Accomplishments:</b> Developed Business Case Analyses on most promising Power Generation and Storage technologies. Identified significant potential fuel saving technologies for related to Energy Storage and supported by the Fleet for investigation in FY11.				
<b>FY 2011 Plans:</b> Increased initially planned funding level in this project to pursue investigation of Shipboard energy storage modules enabling Single Generator Operations. Attendant decrease in planned funding was taken in Hull Husbandry project. In FY 11 project will develop detailed design to support Land Based / Model testing and prepare SCD (s) for energy storage modules to support shipboard test and evaluation in FY12. Continue to identify new fuel saving technologies in Power Generation & Storage.				
<b>FY 2012 Plans:</b> Conduct shipboard installation and test (6-12 month evaluation) of 600KW Energy Storage Module (ESM) to demonstrate Single Generator Operations. Continue to identify new fuel saving technologies in Power Generation & Storage.				
<b>Title:</b> Hull Hydrodynamic Sub Project		1.025	1.200	3.500
<b>Articles:</b>		0	0	0
<b>Description:</b> (U) Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers and/or hull appendages to determine overall mission and cost effectiveness of these improvements.				
<b>FY 2010 Accomplishments:</b> Completed installation of Stern Flaps and commenced test and evaluation, prepare report and update Ship Change Document (SCD) for implementation. Continue to identify additional fuel saving measures in Hull Hydrodynamics.				
<b>FY 2011 Plans:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>		<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Install approved design for medium fins on selected LHD 1 class ship for test and evaluation. Conduct Land Based / Model testing, develop design, prepare SCD(s) for new fuel saving initiatives identified. Prepare final reports. Continue to identify additional fuel saving measures in Hull Hydrodynamics.</p> <p><b>FY 2012 Plans:</b> Continue to identify additional fuel saving technologies in Hydrodynamic systems, prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.</p>					
<p><b>Title:</b> Hull Husbandry Sub Project</p> <p><b>Description:</b> Hull Husbandry Sub Project - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both land based and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency.</p> <p><b>FY 2010 Accomplishments:</b> Continued shipboard test, and evaluation of coatings including diver inspections, evaluation of cleaning methods, development of cleaning procedures and measurement of effectiveness. Continued to identify new fuel saving initiatives in Hull Husbandry.</p> <p><b>FY 2011 Plans:</b> Reduced originally planned funding of this project to support investigation of Fleet supported Energy Storage project for Single Generator Operations. Testing for existing shipboard installations will continue utilizing Ship Powering Condition Monitor (SPCM) to evaluate coating performance and energy savings. Develop Business Case Analysis based on test results of coating and provide recommendations for fleet implementation. Continue to identify new fuel saving initiatives in Hull Husbandry.</p> <p><b>FY 2012 Plans:</b> Continue to utilize Ship Powering Condition Monitor (SPCM) to evaluate coating performance and energy savings. Develop Business Case Analysis based on test results of coating applications and continue development, test and evaluation of new fuel savings initiatives identified. Continue to identify new fuel saving initiatives in Hull Husbandry.</p>			<p><b>Articles:</b></p> <p>1.287 0</p>	<p>1.354 0</p>	<p>0.625 0</p>
<p><b>Title:</b> HVAC Sub Project</p> <p><b>Description:</b> HVAC Sub Project - Project funds will be utilized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements.</p> <p><b>FY 2010 Accomplishments:</b></p>			<p><b>Articles:</b></p> <p>0.200 0</p>	<p>2.736 0</p>	<p>0.750 0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>Developed Business Case Analyses on most promising HVAC identified controls technology reviewed for shipboard installations. Continue to identify additional fuel saving measures in HVAC.</p> <p><b>FY 2011 Plans:</b> In accordance with (IWA) NAVSEA PPD 802-8417916; complete performance, acoustic, shock, vibration and EMI testing of the HES-C prototype chiller. IWA NAVSEA PPD 802-8417916; design, fabricate, test and qualify the Variable Speed Drive required for the HES-C prototype chiller. IAW NAVSEA PPD 802-8417916; prepare ILS package including drawing and technical manual to support DDG83AF backfit/demonstration. Note: The work accomplished by this task will extend through FY12. Continue to identify additional fuel saving measures in HVAC.</p> <p><b>FY 2012 Plans:</b> Continue to identify additional fuel saving technologies in HVAC Systems.</p>				
<p><b>Title:</b> Thermal Management Sub Project</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Thermal Management Sub Project - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC.</p> <p><b>FY 2010 Accomplishments:</b> Investigated various systems and technologies for potential shipboard heat load reduction. Continue to pursue most promising technologies in FY 11.</p> <p><b>FY 2011 Plans:</b> Develop Business Case Analyses on most promising Thermal Management technologies identified and reviewed for shipboard installations. Continue to identify additional fuel saving technologies in Thermal Management.</p> <p><b>FY 2012 Plans:</b> Conduct Land Based / Model testing , develop design, prepare SCD (s) for new fuel saving initiatives identified in Thermal management technologies functional area. Continue to identify additional fuel saving technologies in Thermal Management.</p>		0.200 0	0.220 0	0.100 0
<p><b>Title:</b> Propulsion Systems Sub Project</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> (U) Propulsion Systems Sub Project - Project funds will be utilized to identify requirements and perform landbased and ship board testing of ship propulsion system improvements, on Gas Turbine, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs and to develop a ship-wide monitoring system capable of conveying the power usage and operating conditions of numerous systems on the ship.</p>		0.513 0	0.550 0	4.636 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Continue to evaluate performance of OLWW, report results and identify additional fuel saving measures in Propulsion Systems Functional area. Continue to identify additional fuel saving technologies in Propulsion Systems.</p> <p><b><i>FY 2011 Plans:</i></b> Finish shipboard installation and evaluation of new fuel saving initiatives identified. Issue final report with findings and recommendations of this effort. Evaluate Common Rail Technology for Ship Service Diesel Generator Sets on LSD-41/49 Class. Continue to identify additional fuel saving technologies in Propulsion Systems.</p> <p><b><i>FY 2012 Plans:</i></b> Continue to identify additional fuel saving technologies in Propulsion Systems and develop energy Dashboard for test and evaluation on nominated ships.</p>				
<p><b><i>Title:</i></b> Electrical Systems SubProject</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>Description:</i></b> Electrical Systems Sub Project - Project funds will be utilized to identify and perform landbased and shipboard testing of ship electrical system improvements to reduce energy.</p> <p><b><i>FY 2010 Accomplishments:</i></b> Completed installation of SSL Lighting prototypes in berthing, Passageways, and welldecks and commence test and evaluation, prepare report and update Ship Change Document (SCD) for implementation. Issue final report detailing test result findings and recommendations. Continue to identify new fuel saving technologies in Electrical Systems.</p> <p><b><i>FY 2011 Plans:</i></b> Complete test and evaluation of SSL lighting on LSD41/49 Class test ship. Issue final report detailing test result findings and recommendations. Evaluate Maritime Apperage Suppression Technology (M.A.S.T.) System to conduct gas turbine generator amperage reduction. Investigate development of qualified Solid State Lighting (SSL) Technologies on DDG-51 Class to reduce overall electrical energy loads and therefore energy demand.</p> <p><b><i>FY 2012 Plans:</i></b> Conduct shipboard installation, test and evaluation of SSL technology on DDG-51 Class. Continue to identify new fuel saving technologies in Electrical Systems.</p>		0.374 0	0.374 0	2.275 0
<p><b><i>Title:</i></b> Smart Voyage Planning Decision (SVPDA)</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>FY 2012 Plans:</i></b></p>		-	-	3.400 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Develop analytic software tools for shore-side planning (1) to design ship voyage routes that minimize fuel usage using ship fuel curves, local weather, and ocean-current data, and (2) allow Fleet schedulers to develop mission plans for movement of Ships using minimized fuel usage as a primary focus, while (3) accounting for personnel and ship safety.			
<b>Accomplishments/Planned Programs Subtotals</b>	3.795	19.579	17.405

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

N/A

**D. Acquisition Strategy**

This is a non-acquisition program that develops, evaluates, and validates mature technologies in support of Fleet fuel and maintenance savings. RDT&E Contracts are Competitive Procurements.

**E. Performance Metrics**

Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in barrels of fuel saved based on aircraft and ship demonstration testing.  
Quarterly Program Reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Engineering Development	C/CPFF	TBD:TBD	-	11.050	Jun 2011	-		-		-	0.000	11.050	11.050
Primary Hardware Development	WR	NSWC Carderock: Bethesda, MD	0.761	1.160	Oct 2010	2.751	Oct 2011	-		2.751	0.000	4.672	
Systems Engineering	WR	NSWC Carderock: Bethesda, MD	0.766	0.673	Nov 2010	1.756	Oct 2011	-		1.756	0.000	3.195	
Engineering Development	WR	NSWC Carderock: Bethesda, MD	1.449	0.955	Dec 2010	1.955	Nov 2011	-		1.955	0.000	4.359	
Demonstration & Evaluation	WR	NSWC Carderock: Bethesda, MD	1.472	1.103	May 2011	2.198	May 2012	-		2.198	Continuing	Continuing	Continuing
Primary Hardware Development-SVPDA	WR	NSWC Carderock: Bethesda, MD	-	-		1.200	Oct 2011	-		1.200	0.000	1.200	
Systems Engineering-SVPDA	WR	NSWC Carderock: Bethesda, MD	-	-		0.600	Oct 2011	-		0.600	0.000	0.600	
Engineering Development-SVPDA	WR	NSWC Carderock: Bethesda, MD	-	-		0.110	Nov 2011	-		0.110	0.000	0.110	
Demonstration & Evaluation-SVPDA	WR	NSWC Carderock: Bethesda, MD	-	-		0.870	May 2012	-		0.870	0.000	0.870	
<b>Subtotal</b>			4.448	14.941		11.440		-		11.440			

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NSWC Carderock: Bethesda, MD	-	-		0.200	Dec 2011	-		0.200	0.000	0.200	
Software Support	WR	NSWC Carderock: Bethesda, MD	-	-		0.200	Dec 2011	-		0.200	0.000	0.200	
Integrated Logistics Support	WR	NSWC Carderock: Bethesda, MD	-	-		0.300	Dec 2011	-		0.300	0.000	0.300	
Study Analyses	WR	NSWC Carderock: Bethesda, MD	-	-		0.200	Apr 2012	-		0.200	0.000	0.200	
<b>Subtotal</b>			-	-		0.900		-		0.900	0.000	0.900	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Carderock: Bethesda, MD	1.530	1.198	Nov 2010	1.698	Nov 2011	-		1.698	0.000	4.426	
Operational Test & Evaluation	WR	NSWC Carderock: Bethesda, MD	0.382	0.898	Nov 2010	1.748	Jan 2012	-		1.748	0.000	3.028	
Live Fire Test & Evaluation	WR	NSWC Carderock: Bethesda, MD	0.382	-	Mar 2011	-		-		-	0.000	0.382	
Developmental Test & Evaluation-SVPDA	WR	NSWC Carderock: Bethesda, MD	-	-		0.060	Nov 2011	-		0.060	0.000	0.060	
<b>Subtotal</b>			2.294	2.096		3.506		-		3.506	0.000	7.896	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	WR	NAWCAD PAX:Patuxent River, MD	-	1.893	Jan 2011	-		-		-	0.000	1.893	
Program Management Support	WR	NSWC Carderock:Bethesda, MD	0.536	0.506	Oct 2010	0.856	Oct 2011	-		0.856	0.000	1.898	
Travel	Allot	NAVSEA HQ:Washington, DC	0.076	0.043	Sep 2011	0.043	Sep 2012	-		0.043	0.000	0.162	
Total Assests	WR	NSWC Carderock:Bethesda, MD	0.152	0.100	Mar 2011	0.100	Mar 2012	-		0.100	0.000	0.352	
Program Management Support-SVPDA	WR	NSWC Carderock:Bethesda, MD	-	-		0.560	Oct 2011	-		0.560	0.000	0.560	
<b>Subtotal</b>			0.764	2.542		1.559		-		1.559	0.000	4.865	
<b>Project Cost Totals</b>			7.506	19.579		17.405		-		17.405			

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>
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ENERGY CONSERVATION (ADV)	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
	Proposal Development - FY10				Proposal Development - FY11				Proposal Development - FY12				Proposal Development - FY13				Proposal Development - FY14				Proposal Development - FY15				Proposal Development - FY16			
	Proposal Acceptance																											
	Model & Simulation (if required)																											
	Prototype Development																											
	Prototype Demo																											
	Land Based Testing																											
	Determine Fuel and Maintenance Savings																											
	Shipboard Evaluation																											
	Component Implementation Maintenance Savings																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0829.: <i>ENERGY CONSERVATION (ADV)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ENERGY CONSERVATION (ADV)</b>				
Proposal Development - FY10	1	2010	3	2010
Proposal Development - FY11	1	2011	3	2011
Proposal Development - FY12	1	2012	3	2012
Proposal Development - FY13	1	2013	3	2013
Proposal Development - FY14	1	2014	3	2014
Proposal Development - FY15	1	2015	3	2015
Proposal Development - FY16	1	2016	3	2016
Proposal Acceptance	1	2010	4	2016
Model & Simulation (if required)	1	2010	4	2016
Prototype Development	1	2010	4	2016
Prototype Demo	1	2010	4	2016
Land Based Testing	2	2010	4	2016
Determine Fuel and Maintenance Savings	2	2010	4	2016
Shipboard Evaluation	2	2010	4	2016
Component Implementation Maintenance Savings	2	2011	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0838: <i>Mobility Fuels (ADV)</i>	4.371	10.824	15.888	-	15.888	14.987	13.881	13.885	12.382	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project provides data through laboratory, component, engine, fuel system, and weapon system tests, which relate the effects of changes in the Navy fuel procurement specification properties and chemistries to the performance and reliability of Naval ship, aircraft, and fuel distribution systems. The information is required to: (a) develop, validate, and execute the test protocols necessary to approve fuels from non-petroleum feedstocks, (b) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide, (c) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military specifications are unavailable or in short supply, (d) technically justify changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in fuel supply, and (e) improve capability to provide fuel quality surveillance in the field. Continued volatility and rapid escalation of the cost of fuel have placed additional pressures on Navy budgets responsible for maintaining and sustaining the Navy tactical fleet both now and in the future. These pressures have placed an added emphasis on the potential use of lower cost commercial fuels and/or fuels derived from non-petroleum sources as a potential means of stabilizing the current and anticipated price volatility. Recent problems with petroleum-based fuel quality have demonstrated the adverse effects that fuel-related problems can have on ship and aircraft system performance, reliability, and readiness. While the program impacts on readiness, additional maintenance costs, and the cost of lost equipment are often difficult to fully quantify, they are often many times the cost of this program. The potential risk of fuel-related problems over the next decade, given the unknown supply, feedstocks, environmental regulations, and the introduction of new theaters of operation will continue to increase.

This project represents the Navy's only investment designed to maintain its ability to operate as a "smart" customer for fuels that cost over \$4.0B per year for procurement, transport, storage, and consumption, and are essential to fleet operations. Additionally, it is the Navy's only investment in the approval of alternative fuels for tactical applications and directly supports the Navy's energy goals of increased energy security and environmental stewardship.

The increase in project 0838 in PE 0603724N from FY10 to FY11 and out is to support the Navy's effort to test and certify alternative fuels for Navy ship and aircraft utilization. The increased funding is for procurement of test fuel and to conduct the large-scale engine and system tests required to approve alternative fuel candidates for inclusion into the Navy's JP-5 and F-75 specifications. American Recovery and Reinvestment (ARRA) funding was provided to accelerate the development of test requirements and to validate them using the F/A-18 as the lead fleet test vehicle. The funding provided in project 0838 in PE 0603724N is to expand the ARRA-sponsored efforts across additional aircraft and ship systems.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Aircraft Fuels	2.173	4.313	-
<b>Articles:</b>	0	0	

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Description:</b> Perform development, test and evaluation work on Naval aircraft fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance and approval to fleet operators for the safe use of military aircraft that include new additives or are derived from non-petroleum sources; c) make needed periodic changes to the fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry and d) improve fleet methods to ensure fuel quality.</p> <p><b>FY 2010 Accomplishments:</b> Completed development of protocol to evaluate and approve alternative fuels. Down-selected 50% bio-derived/50% petroleum blend as initial alternative for JP-5 testing. Completed lab and rig testing on 50/50 bio blend JP-5. Completed initial development of multi-property shipboard sensor to measure critical jet fuel properties.</p> <p><b>FY 2011 Plans:</b> Down-select initial alternative fuel candidate and initiate testing to validate protocol. Continue development of dual compatible (ship and aircraft) lubricity improving additive.</p>				
<p><b>Title:</b> Ship Fuels</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Perform development, test, and evaluation work on Naval ship propulsion fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military fuels are unavailable or in limited supply; and c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry including fuel derived from non-petroleum sources.</p> <p><b>FY 2010 Accomplishments:</b> Completed development of protocol to evaluate and approve alternative fuels. Completed testing of sensors to rapidly determine critical fuel properties. Down-selected 50% bio-derived/50% petroleum blend as initial alternative F-76 for testing. Completed lab and rig scale chemical and property testing of 50/50 bio blend F-76. Completed small high-speed diesel engine testing, and initiated gas turbine engine test.</p> <p><b>FY 2011 Plans:</b></p>		2.198 0	6.511 0	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Complete development of Navy protocol to evaluate and approve alternative fuels. Down select initial alternative fuel candidate and initiate validation of evaluation and approval protocol. Transition shipboard sensor(s) to rapidly determine critical fuel properties. Continue development of dual compatible (ship and aircraft) lubricity improving additive.			
<b>Title:</b> Naval Tactical Fuels	-	-	15.888
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Complete propulsion and system testing of 50/50 bio-blend JP-5 and 50/50 bio-blend F-76. Initiate rig, laboratory and component testing on JP-5 and F-76 containing greater than 50% of bio-derived components. Revise aircraft, ship, and infrastructure alternative fuels protocols.			
<b>Accomplishments/Planned Programs Subtotals</b>	4.371	10.824	15.888

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

N/A

**D. Acquisition Strategy**

Alternative Fuel Efforts including testing and fuel procurement efforts in FY10-13 will be competitively contracted, and performed under Cost Plus Fixed Fee and Firm Fixed Price contracts.

**E. Performance Metrics**

Program will develop Alternate Fuel test and certification protocols for 100% of all Naval aircraft and ships. Program will evaluate biofuels, biofuel chemistry and components tests as defined in test and certification protocols.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering	WR	NRL:Washington, D.C.	0.825	0.200	Nov 2010	0.400	Nov 2011	-		0.400	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD:Patuxent River, MD	4.437	0.800	Nov 2010	1.400	Nov 2011	-		1.400	Continuing	Continuing	Continuing
Engineering Development	C/CPFF	TBD:TBD	-	2.201	Feb 2011	-		-		-	0.000	2.201	2.201
Systems Engineering	WR	Navy Petroleum:Ft. Belvoir, VA	-	-		0.068	Nov 2011	-		0.068	0.000	0.068	
Systems Engineering	WR	NAVSEA:Philadelphia, PA	-	-		0.140	Nov 2011	-		0.140	0.000	0.140	
<b>Subtotal</b>			5.262	3.201		2.008		-		2.008			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	C/CPFF	Various:Various	4.710	6.001	Jan 2011	-		-		-	0.000	10.711	10.711
Developmental Test & Evaluation	MIPR	Army Tank/Arm:Warren, MN	0.228	-		-		-		-	0.000	0.228	
Test Fuel	C/FFP	TBD:TBD	-	-		5.000	Mar 2012	-		5.000	0.000	5.000	5.000
Hardware Testing	C/CPFF	Alion S&T:McLean, VA	-	-		2.000	Mar 2012	-		2.000	0.000	2.000	2.000
Hardware Testing	SS/CPFF	General Electric:Lynn, MA	-	-		1.500	May 2012	-		1.500	0.000	1.500	1.500
Hardware Testing	SS/CPFF	Rolls Royce:Indianapolis, IN	-	-		2.000	May 2012	-		2.000	0.000	2.000	2.000
Hardware Testing	C/CPFF	Various:TBD	-	-		3.380	May 2012	-		3.380	0.000	3.380	3.380
<b>Subtotal</b>			4.938	6.001		13.880		-		13.880	0.000	24.819	

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>
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<b>Mobility Fuels (ADV)</b>	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
A/C Fuels Alternative Fuel Evaluation/Certification																												
A/C Fuels Sensor Development																												
A/C Fuels Advance Shipboard Compatible Performance Additive																												
Ship Fuels Alternative Fuel Evaluation/Certification																												
Ship Fuels Sensor Development																												
Ship Fuels A/C & Ship Compatible Lubricity Additive Development																												
Alternative Fuel Evaluation/Certification																												
50/50 BioFuel Blend Hardware Testing																												
50/50 Ship/Aircraft Demonstrations																												
Green Carrier Strike Group Fleet Demonstration																												
Generation 2 Protocol Development																												
50% Bio Derived Lab/Hardware Testing																												
50% Bio Derived Ship/Aircraft Demonstrations																												
Advanced BioFuel Lab/Rig Testing																												
Advanced BioFuel Hardware Testing																												
Green Carrier Strike Group Sail																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0838: <i>Mobility Fuels (ADV)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Mobility Fuels (ADV)</i></b>				
A/C Fuels Alternative Fuel Evaluation/Certification	1	2010	4	2011
A/C Fuels Sensor Development	1	2010	2	2011
A/C Fuels Advance Shipboard Compatible Performance Additive	1	2010	4	2011
Ship Fuels Alternative Fuel Evaluation/Certification	1	2010	4	2011
Ship Fuels Sensor Development	1	2010	2	2011
Ship Fuels A/C & Ship Compatible Lubricity Additive Development	3	2010	4	2011
Alternative Fuel Evaluation/Certification	1	2012	4	2016
50/50 BioFuel Blend Hardware Testing	1	2012	2	2012
50/50 Ship/Aircraft Demonstrations	1	2012	2	2012
Green Carrier Strike Group Fleet Demonstration	1	2012	4	2012
Generation 2 Protocol Development	1	2012	4	2012
50% Bio Derived Lab/Hardware Testing	4	2012	3	2014
50% Bio Derived Ship/Aircraft Demonstrations	1	2015	4	2015
Advanced BioFuel Lab/Rig Testing	3	2013	4	2015
Advanced BioFuel Hardware Testing	1	2015	4	2016
Green Carrier Strike Group Sail	1	2015	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0928: <i>Directed Energy Research</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0928: <i>Directed Energy Research</i>	-	-	13.404	-	13.404	16.290	16.079	19.813	3.266	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Legislation, Executive Orders (EO), and SECNAV Guidance direct DoN to reduce fossil fuel use and increase renewable energy use. This guidance includes the Energy Policy Act of 2005, which directs agencies to reduce energy intensity 30% by 2015, the National Defense Authorization Act of 2010, which directs DOD to source 25% of its energy from renewable sources by 2025, EO13514, which directs DOD to reduce greenhouse gas emissions by 2020, and SECNAV energy goals, which direct that 50% of DoN's energy come from alternative sources by 2020. Further, studies by the Defense Science Board and others have stressed the dangerous reliance of DOD on vulnerable grid power and unreliable imported oil. Currently, the Navy has limited options for producing energy from renewable sources. Private industry and other federal agencies are developing and testing new technologies. Ocean Thermal Energy Conversion (OTEC) and other ocean energy technologies have potential to alleviate current Navy island installation dependence on fossil fuel, at comparable costs to projected fossil energy sources. Also, advanced energy management systems have potential to increase installation energy security and enable broader use of renewable energy sources. Because of unique mission and aggressive time frames, testing and demonstration under Navy oversight would facilitate deployment throughout the DoN more quickly than a purely passive approach.

This Energy RDT&E Project will test, evaluate, and validate components as well as demonstrate cost-effective and technical viability of energy efficiency and renewable energy prototypes. All efforts will be coordinated across DOD and with other agencies as appropriate. Specifically, this project aims to pursue two areas of testing and evaluation:

- a. Renewable Ocean Thermal Energy Deployment and Testing: This project will test and validate OTEC components and deploy, test, evaluate, and assess cost-effectiveness and environmental impact of OTEC prototype designs for deployment at Naval installations. It will also support feasibility evaluation of new energy sources for use at Naval installations, as well as test components and prototypes of other ocean energy technologies with potential for widespread applicability to energy security and renewable energy requirements.
- b. Demonstration and Validation of Alternative Energy, Energy Efficiency and Advanced Grid Management Technology: This project will support the testing, demonstration, validation, and application of innovative facility energy efficiency and alternative energy technology. In addition, it will support demonstration and validation of advanced electric grid management systems, known as "Smart Grid" technology, for use at Naval installations to enable improved energy security.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Directed Energy Research	-	-	13.404
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Initiate component testing and prototype development and deployment for alternative energy and advanced grid management technology at Naval Installations as follows: - Initiate evaluation of environmental impacts of ocean thermal, wave, and tidal energy generation prototypes			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0928: <i>Directed Energy Research</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> <li>- Initiate demonstration, testing, evaluation, and validation of ocean thermal energy generation components</li> <li>- Initiate demonstration, testing, deployment, and evaluation of advanced wave and tidal energy generation prototypes</li> <li>- Initiate demonstration, testing, deployment, and evaluation of advanced grid management technology at Naval installations</li> <li>- Initiate demonstration, testing, deployment, and evaluation of energy effeicient and alternative energy technology innovations</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	13.404

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

**D. Acquisition Strategy**  
Demonstration and validation are conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.

**E. Performance Metrics**  
The program will be coordinated across DOD and with other agencies as appropriate to achieve 30% Energy Intensity Reduction by FY2015 and 25% Renewable Energy Increase by 2025.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0928: <i>Directed Energy Research</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Navy Energy Program	Various	NFESC:Port Hueneme, CA	-	-		11.854	Jan 2012	-		11.854	Continuing	Continuing	Continuing
Navy Energy Program	Various	NDW:Washington, DC	-	-		0.550	Apr 2012	-		0.550	Continuing	Continuing	Continuing
Navy Energy Program	Various	NAVFAC HQ:Washington, DC	-	-		1.000	Aug 2012	-		1.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		13.404		-		13.404			

**Remarks**  
 The Navy Energy Program will be assessing multiple technologies for energy efficiency and energy reduction. This technology assessment continues throughout the program life. As these technologies are assessed, there will be a requirement for a concept of how the technologies may be successfully employed by the Navy. These, too, will continue throughout the program life.  
 For OTEC, advanced grid, and select other technologies, there will be a requirement for component testing and validation. This testing/validation is expected to result in completed tests, the milestones occurring in 3QFY12 and 3QFY13.  
 For OTEC, there is a requirement for a pilot prototype, which will have a draft design complete by the end of FY12, and construction occurring throughout FY13-FY15, resulting in installation by the end of FY15.  
 The OTEC system will then be demonstrated during FY16, resulting in a development test at the end of FY16.  
 Towards the end of the demonstration phase in FY16, it is expected that procurement specifications will be refined for a larger, commercial scale and OTEC plant.  
 Throughout the testing and evaluation period, deliverables will be required at the end of each FY for completed designs, component test results, validated components, and pilot prototype design and testing.

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	-		13.404		-		13.404			

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0928: <i>Directed Energy Research</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Directed Energy Research</i></b>				
Technology Assessment	1	2012	4	2016
Concept of Employment	1	2012	4	2016
Component Test/Validation I	3	2012	3	2012
Component Test/Validation II	3	2013	3	2013
Prototype Design	4	2012	4	2012
Prototype Construction	1	2013	4	2015
Prototype Installation	4	2015	4	2015
Demonstration	4	2015	4	2016
Development Testing	4	2016	4	2016
Procurment Specifications	3	2016	3	2016
Deliverables: Phase I	3	2013	3	2013
Deliverables: Phase II	3	2014	3	2014
Deliverables: Phase III	3	2015	3	2015
Deliverables: Phase IV	3	2016	3	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0929: <i>Aircraft Energy Conservation</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0929: <i>Aircraft Energy Conservation</i>	-	-	23.841	-	23.841	26.030	33.980	43.959	24.063	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Aircraft Energy Conservation program is designed to develop and implement energy and maintenance saving improvements into existing fleet assets. The program identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the program is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Aircraft Energy Conservation	-	-	23.841
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Complete F/A-18 bring-back weight study. Conduct advanced engine efficiency technology demonstration. Conduct field trial of drag-resistant aircraft coatings. Implement fleet i-ENCON (Energy Conservation) program. Complete air vehicle energy savings technology study.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	23.841

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

N/A

**D. Acquisition Strategy**

This is a non-acquisition program that develops, evaluates, and validates mature technologies in support of fleet fuel and maintenance savings.

**E. Performance Metrics**

Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in barrels of fuel saved based on aircraft demonstration testing.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0929: <i>Aircraft Energy Conservation</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD:Patuxent River, MD	-	-		2.300	Nov 2011	-		2.300	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		2.300		-		2.300			

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Testing	C/CPFF	Boeing:St. Louis, MO	-	-		4.000	Mar 2012	-		4.000	0.000	4.000	4.000
Hardware Testing	C/CPFF	PWA:Hartford, CT	-	-		12.000	Mar 2012	-		12.000	0.000	12.000	12.000
Hardware Testing	WR	NAWCAD:Patuxent River, MD	-	-		0.600	Nov 2011	-		0.600	Continuing	Continuing	Continuing
Hardware Testing	C/CPFF	TBD:TBD	-	-		2.000	May 2012	-		2.000	0.000	2.000	2.000
<b>Subtotal</b>			-	-		18.600		-		18.600			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD:Patuxent River, MD	-	-		0.027	Nov 2011	-		0.027	Continuing	Continuing	Continuing
Engine Efficiency Evaluations	C/CPFF	TBD:TBD	-	-		1.485	May 2012	-		1.485	0.000	1.485	1.485
Air Vehicle Energy Efficiency Evaluations	C/CPFF	TBD:TBD	-	-		1.429	May 2012	-		1.429	0.000	1.429	1.485
<b>Subtotal</b>			-	-		2.941		-		2.941			

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-		23.841		-		23.841			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2012 Navy</b>	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0929: <i>Aircraft Energy Conservation</i>
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	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
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<b>Remarks</b>								

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0929: <i>Aircraft Energy Conservation</i>
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Aircraft Energy Conservation	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
	Aircraft Energy Conservation																											
	F414 Engine Efficiency																											
	Aircraft Drag Reducing																											
	F/A-18 Bring-Back Weight Study																											
	i-ENCON Program																											
	Air Vehicle Energy Efficiency RDT&E																											
	Engine Efficiency RDT&E																											
	Mission Planning Module Upgrades																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 0929: <i>Aircraft Energy Conservation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Aircraft Energy Conservation</i></b>				
Aircraft Energy Conservation	1	2012	3	2015
F414 Engine Efficiency	1	2012	2	2012
Aircraft Drag Reducing	1	2012	4	2013
F/A-18 Bring-Back Weight Study	1	2012	3	2013
i-ENCON Program	1	2012	4	2016
Air Vehicle Energy Efficiency RDT&E	1	2012	4	2016
Engine Efficiency RDT&E	1	2012	4	2016
Mission Planning Module Upgrades	1	2012	2	2013

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603724N: <i>Navy Energy Program</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	10.477	-	-	-	-	-	-	-	-	0.000	10.477
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add.

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

	FY 2010	FY 2011
<b><i>Congressional Add:</i></b> Alt and Renew Energy Prog - Cong	2.988	-
<b><i>FY 2010 Accomplishments:</i></b> Initiate study to evaluate increase of F-18 carrier weight limits.		
<b><i>Congressional Add:</i></b> Solar Heat Reflective Film for Energy Efficiency	3.904	-
<b><i>FY 2010 Accomplishments:</i></b> New Congressional add started in FY10. After FMB2 review, funds were released to NAVFAC Headquarters in the third quarter of FY10. Funds have been issued for background research on the state of the technology, research being pursued by industry and academia, and identification of Department of the Navy needs to establish a statement of work to expend the balance of funds.		
<b><i>Congressional Add:</i></b> Molten Carbonate Fuel Cell Demonstrator	3.585	-
<b><i>FY 2010 Accomplishments:</i></b> Manufactured, installed, commissioned, operated, and maintained a 300 kilowatt (KW) molten carbonate fuel cell (MCFC). Selected operational parameters are being monitored, recorded, analyzed, and reported over a period of 36 months. Exercised an option to increase the installed capacity of the MCFC power system from 300 KW to a maximum 1.4 megawatt.		
<b>Congressional Adds Subtotals</b>	10.477	-

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

N/A

**D. Acquisition Strategy**

Not required for Congressional Add.

**E. Performance Metrics**

Not required for Congressional Add.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	9.715	3.746	3.754	-	3.754	3.792	3.882	3.962	4.032	Continuing	Continuing
0995: <i>Naval Facilities System</i>	1.664	1.784	1.772	-	1.772	1.793	1.838	1.876	1.909	Continuing	Continuing
3155: <i>Force Protection Ashore</i>	1.997	1.962	1.982	-	1.982	1.999	2.044	2.086	2.123	Continuing	Continuing
9999: <i>Congressional Adds</i>	6.054	-	-	-	-	-	-	-	-	0.000	6.054

**A. Mission Description and Budget Item Justification**

This program provides for capabilities to a) overcome performance limitations and reduce the life cycle cost of shore facilities, and b) provide protection against terrorist attacks for shore installations and their operations. The program focuses on technical and operational issues of specific Navy interest, where there are no unbiased test validated Commercial Off the Shelf (COTS) solutions available, and where timely capabilities may not materialize without specific demonstration or validation by the Navy. Additionally, the program completes the development of technologies originating from Navy, DOD and other sources of Science and Technology programs, including the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) and Department of Energy (DOE). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities, Sustainment Restoration and Modernization (FSRM) program, and Antiterrorism and Force Protection (ATFP) Other Procurement, Navy (OP,N) program.

Project 0995 addresses the following Navy facilities requirements during FY 2010 through FY 2016: Advance Technology for Waterfront Facilities Repair and Enhancements, Facilities Technologies to Reduce the Cost of Facilities Sustainment, Restoration and Modernization for reducing the total ownership cost (TOC) of future and existing Facilities. This project is consistent with recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities."

Started in FY2006 the Force Protection Ashore Project 3155 addresses selective topics in modeling, and material technologies to reduce the vulnerability of installations; and reduce the acquisition and operating costs of protective technologies. The demonstrations and validations provide the independent, technical and operational test data for the development of competitive performance specifications to acquire the required capabilities. The ATFP project is coordinated with other DOD programs.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	10.039	3.746	3.820	-	3.820
Current President's Budget	9.715	3.746	3.754	-	3.754
Total Adjustments	-0.324	-	-0.066	-	-0.066
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.304	-			
• Section 219 Reprogramming	-0.021	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.066	-	-0.066
• Congressional General Reductions Adjustments	0.001	-	-	-	-

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

**Project: 9999: Congressional Adds**

Congressional Add: *Photovoltaic Rooftop Systems for Military Housing*

Congressional Add: *Permanent Magnet Linear Generator Power Buoy System*

Congressional Add: *Hydrokinetic Power Generator*

Congressional Add: *Regenerative Fuel Cell Back-up Power*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	1.195	-
	1.912	-
	1.593	-
	1.354	-
Congressional Add Subtotals for Project: 9999	6.054	-
Congressional Add Totals for all Projects	6.054	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0995: <i>Naval Facilities System</i>	1.664	1.784	1.772	-	1.772	1.793	1.838	1.876	1.909	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This program provides the Navy with new engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available RDT&E resources on satisfying facility requirements where the Navy is a major stakeholder or where there are no test validated Commercial Off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy science and technology programs, plus a variety of other sources which includes the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities Sustainment Restoration and Modernization Programs (FSRP). Project 0995 is addressing three Navy facilities requirements: waterfront facilities repair and upgrade, technologies to reduce the cost of facilities, Sustainment, Restoration and Modernization (FSRM); and Modular Hybrid Pier.

**Waterfront facilities repair and upgrade:**

About 75% of the Navy's waterfront facilities are over 45 years old. They were designed for a service life of 25 years and to satisfy the mission requirements existing at that time. The over aged reinforced concrete requires costly and repetitive repairs. In addition, to accomplish more pier side ship maintenance and thus reduce dry dock costs, these piers must be strengthened to support concentrated crane loads up to 140 tons when piers were originally designed for no concentrated loads. At the time piers were designed to service one, possibly two particular ship classes, berthing flexibility is now limited by mooring and utility arrangements. This sub-project addresses new materials design methods, and retrofit methods to extend the service life of existing waterfront facilities by an additional 15 or more years. The project also addresses updating the mission based service, environmental, and protection loading requirements imposed by changes in platforms, operations and threats. Other initiatives include: enhanced facilities management processes, using building information modeling (BIM) technology and waterfront utilities service enhancements using models to achieve flexible berthing arrangements consistent with current and future platform mooring configurations and hotel service requirements. Using this new technology at a cost of \$1-2M for repairs and upgrades per pier will result in \$50M in cost avoidance for demolition and replacement.

**Technologies to reduce the cost of FSRM:**

SRM issues of high operational significance are addressed on a priority basis. The costs to correct these critical facility deficiencies are over \$3.1B as reported in the FY 2000 Annual Inspection Summary (AIS). Current Navy FSRM funding levels are insufficient to prevent the continued growth of the backlog of mission and safety critical maintenance and repairs. This effort will demonstrate and validate the cost and reliability of advanced technologies in order to assure their acceptance and implementation in traditionally conservative public works and construction industries. The effort will accelerate the validation, commercialization, and wide-spread implementation of the facility technologies urgently required to reduce the cost of correcting the deficiencies in the Navy's FSRM backlog. Estimated returns on these investments are better than 60 to 1.

**Modular Hybrid Pier (MHP):**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>
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MHP started in FY2002. The Navy is faced with the necessity of recapitalizing a large portion of its waterfront infrastructure over the next several decades. The MHP initiative develops and validates innovative material and design technologies for a mission-flexible waterfront infrastructure characterized by significantly reducing total ownership cost and increasing mission flexibility. The MHP sub-project provides improved technology for new piers to include emerging innovative structural and materials technologies, particularly those that will transition from the Navy's applied research and advanced development program, providing enhanced capabilities. Anticipated benefits include a less maintenance and repair costs and use of advanced materials and high performance lightweight concrete producing structures that have twice the economic service life of the conventional piers. Modular design will enable off-site fabrication in pre-cast plants that will shorten the duration of construction and lower the cost relative to conventional on-site demolition followed by on site/on base construction. Plant fabrication will vastly improve quality and result in repair-free durability because of superior performance concrete with post-tensioning technologies. The modular concept will facilitate change-out of components for modifications to increase capacity to adapt to future ship designs. Mobility due to barge configuration will enable relocatability of structural platform modules through flotation is a significant new capability option which will save money and provides new military worth/planning and deployment options. An economic analysis has shown that a modular hybrid (deployable) pier will have a Net Present Value (NPV) cost that is \$15M less over its service life than that for a conventional pier constructed of ordinary reinforced concrete. The knowledge from this pier project will enable other concrete facility options that are fabricated offsite and relocatable for adjustment to basing changes. The technology of concrete and reinforcement and corrosion proofing will have wide spread applicability to all concrete construction. The 35% design package to include criteria, design drawings, cost estimate and mooring station design will be completed in FY2010. Remaining work includes seismic analysis and mooring station design for locations other than San Diego, CA, and transition into a MILCON budget exhibit 1391.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>Title:</b> Naval Facilities System</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b>                      Waterfront Facilities Repair &amp; Upgrade:                      Updated seismic design criteria for UFC 4-152-01 incorporated new analysis methods and developed and populated the first phase of an unclassified 3D ship model repository to improve fleet support.</p> <p>Facilities, Sustainment, Restoration &amp; Modernization:                      Initiated field validation testing and performance monitoring of pavement installed in vertical take-off and landing (VTOL) pads for resistance to high temperature/erosion effects of engine exhaust of joint strike fighter (JSF), F-35B. [Transition from Enterprise and Platform Enabler (FNC-EPE), PE 0602236N]. Initiated demonstration and validation of the following Corrosion, Protection, and Control (CPC) projects: accelerated weathering of organic materials, electrochemical chloride extraction of reinforced concrete during repair of waterfront structures materials, and enhanced guidelines for marine concrete repairs. Completed sustainable engineering and maintenance study Phase 1 and began Phase 2. Sustainable study provided for input into design and construction criteria as well as best proactive documents. Assess cooling options for airframe maintenance in shore based hangars.</p> <p>Modular Hybrid Pier:</p>	1.664 0	1.784 0	1.772 0



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>
<p>Completed 35% Design; cost estimate, mooring station design, and criteria to support MILCON budget exhibit 1391 for development. Also began seismic analysis and effects research.</p> <p><b>FY 2011 Plans:</b>  <b>Waterfront Facilities Repair &amp; Upgrade:</b>            Support and manage the advanced base mooring system small business innovative research (SBIR) project and the dry-dock seismic analysis standard procedure as a pilot for the analysis of 26 additional Navy dry-docks requiring analysis to meet requirements. Provide for the standardization, utilization and sustainment of facilities data sets from facility design to facility demolition consistent with Building Information Management (BIM) and Modeling processes and establish data interoperability with business processes in the Capital Improvements Business Line (CIBL) to ensure that efficiencies are realized.</p> <p><b>Facilities, Sustainment, Restoration &amp; Modernization:</b>            Continue validation testing/performance monitoring of vertical take-off and landing (VTOL) pads for JSF (F-35B). Test and evaluate performance of alternative materials, and surfacing concepts and methods. Conduct field (validation) testing of high temperature resistant pavement joint sealants. Continue corrosion prevention and control projects and sustainability engineering and maintenance research. Evaluate possible solutions and develop associated design and construction criteria to support the transition of new technologies associated with weapons system introduction into the shore facilities infrastructure. Focus in this area is to address lowest Total Ownership Cost (TOC), sustainable operations and capturing best practice technologies to facilitate successful operations of the weapons platforms and existing infrastructures. Investigate solutions for contingency operations and post-disaster situations for Naval Installations with improved assessment, data collection, diagnostics and communications to assure faster and more efficient/effective response. Continue to leverage BIM best practices for reduction of TOC on shore infrastructure.</p> <p><b>Modular Hybrid Pier:</b>            Complete transition of MHP 35% technology design into MCON budget exhibit 1391 P-440 and complete mooring station design for multiple dynamic locations.</p> <p><b>FY 2012 Plans:</b>  <b>Waterfront Facilities Repair &amp; Upgrade:</b>            Continue support and manage the Advanced Base Mooring system SBIR project and the dry-dock seismic analysis standard procedure as a pilot for the analysis of 26 additional Navy dry-docks requiring analysis to meet NAVSEA requirements. Provide for the standardization, utilization and sustainment of facilities data sets from facility design to facility demolition consistent with Building Information Management and Modeling processes and establish data interoperability with business processes in the</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p>CIBL to ensure that efficiencies are realized between NAVFAC Business Lines in support of the Fleet, CNIC and other NAVFAC Supported Commanders.</p> <p>Facilities, Sustainment, Restoration &amp; Modernization: Continue validation testing/performance monitoring of vertical take-off and landing (VTOL) pads for JSF (F-35B). Test and evaluate performance of alternative materials, and surfacing concepts and methods. Conduct field (validation) testing of high temperature resistant pavement joint sealants. Continue Corrosion Prevention &amp; Control projects and Sustainability Engineering and Maintenance Research. Continue evaluation of solutions to develop associated design and construction criteria to support the transition of new technologies associated with weapons system introduction into the shore facilities infrastructure. Continue investigations into support for contingency operations and post-disaster situations with improved assessment, data collection, diagnostics and communications to assure faster and more efficient/effective response. Continue to leverage BIM best practices for reduction of TOC on shore infrastructure.</p> <p>Modular Hybrid Pier: Project complete in FY2011. No further funding to be applied.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		1.664	1.784	1.772
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>D. Acquisition Strategy</b>				
The Projects identified in this budget have been carefully selected to respond to both the facilities support for new Weapons Systems Acquisition Category Programs and to address TOC considerations of an evolving and aging infrastructure. Each project has been assessed to ensure that it is addressing legitimate risks and requirements of the shore establishment. The results of these projects will be the development of design and construction criteria and or components that directly impact the shore facilities and the weapons systems supported.				
<b>E. Performance Metrics</b>				
Quarterly Program Reviews to include funds status, schedule review, assessment of plan to actual, and review of accomplishments and issues to date.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Waterfront Facilities Repair & Upgrade	WR	NFESC:Pt Hueneme, CA	2.050	0.475	Mar 2011	0.441	Sep 2012	-		0.441	Continuing	Continuing	Continuing
Facilities, Sustainment, Restoration and Modernization Tech	WR	NFESC:Pt Hueneme, CA	4.889	1.184	Mar 2011	1.331	Sep 2012	-		1.331	Continuing	Continuing	Continuing
Modular Hybrid Pier (CA)	WR	NFESC:Pt Hueneme, CA	3.890	0.125	Mar 2011	-		-		-	0.000	4.015	
Modular Hybrid Pier (WA)	WR	BergerAbam:Seattle, WA	1.463	-		-		-		-	0.000	1.463	
<b>Subtotal</b>			12.292	1.784		1.772		-		1.772			

**Remarks**  
Remarks:

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	12.292	1.784		1.772		-		1.772			

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 0995</b>																												
Modular Hybrid Pier																												
Facilities, Sustainment, Restoration & Modernization Tech																												
Joint Strick Fighter Pavement Development																												
Corrosion Prevention and Control (3 projects):																												
Accelerated Weathering of Organic Materials																												
Enhanced Guidance for Marine Contract Repair																												
Electrochemical Chloride Extraction (ECE) Concrete Repair																												
Sustainability Engineering and Maintenance (Phase 1)																												
Sustainability Engineering and Maintenance (Phase 2)																												
Investigate Best Practice Solutions for Post Disaster Analysis and Recovery																												
Determine Lowest TOC for Hanger Electronics System																												
Waterfront Facilities Repair & Upgrade																												
Waterfront IPT - 3D Ships Graphics																												
Waterfront IPT - Seismic Design Criteria																												
Advanced Base Mooring System																												
Drydock Seismic Analysis Procedures																												

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>
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FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

Determine Reduction in TOC for Waterfront Facilities via Information Management Policies and Processes	
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 0995: <i>Naval Facilities System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0995</b>				
Modular Hybrid Pier	1	2010	4	2011
Facilities, Sustainment, Restoration & Modernization Tech	1	2010	4	2016
Joint Strick Fighter Pavement Development	1	2010	4	2011
Corrosion Prevention and Control (3 projects):	2	2010	4	2011
Accelerated Weathering of Organic Materials	2	2010	4	2011
Enhanced Guidance for Marine Contract Repair	2	2010	4	2011
Electrochemical Chloride Extraction (ECE) Concrete Repair	2	2010	4	2011
Sustainability Engineering and Maintenance (Phase 1)	1	2010	2	2010
Sustainability Engineering and Maintenance (Phase 2)	4	2010	4	2011
Investigate Best Practice Solutions for Post Disaster Analysis and Recovery	2	2011	4	2013
Determine Lowest TOC for Hanger Electronics System	2	2011	4	2012
Waterfront Facilities Repair & Upgrade	1	2010	4	2016
Waterfront IPT - 3D Ships Graphics	3	2010	4	2010
Waterfront IPT - Seismic Design Criteria	3	2010	1	2011
Advanced Base Mooring System	2	2011	4	2012
Drydock Seismic Analysis Procedures	2	2011	4	2012
Determine Reduction in TOC for Waterfront Facilities via Information Management Policies and Processes	2	2011	4	2013

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3155: <i>Force Protection Ashore</i>	1.997	1.962	1.982	-	1.982	1.999	2.044	2.086	2.123	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Protection of the Navy Installations against terrorist activities requires development and deployment of advanced technology for force protection capabilities. This antiterrorism and force protection ashore project will develop, demonstrate and validate technologies for the following: access control and perimeter denial; waterside protection against craft and swimmer intrusion; secure and efficient operations centers and emergency centers (including human and information support systems); construction integrated surveillance sensors and robotic systems for intruder detection; material systems to improve utilities security and recovery; and material concepts. Program currently being evaluated are the inclement weather sensors for detecting intruders, intelligent video (VEW Maritime) in waterside security systems and over-the-water analytics, Command, Control, and Communication (C3) capabilities for emergency operations, and identifying and interdicting malevolent threats - watercraft, swimmers, divers, unmanned underwater vessels (UUVs) to reduce injury and death to the war fighter. Through demonstration and validation of risk modeling and simulation models, the potential of emerging technologies will be evaluated and installation security strategies that reduce manpower and other costs will be formulated. Installation protection concepts against attacks from the air will be identified and jointly demonstrated. These demonstrations and validations derive from advanced technology from science and technology programs of government academia and industry. The technology produces data for performance specifications for competitive procurement. All work will be coordinated with other programs and through industry forums as appropriate.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Force Protection Ashore	1.997	1.962	1.982
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
Continued advanced prototype development and demonstrations for ATRP applications at naval installations as follows:			
- Completed the development and demonstration of inclement weather sensors for detecting intruders at installation perimeter.			
- Continued integration and evaluation of Intelligent Video (VEW Maritime) in waterside security systems.			
- Initiated integration of counter surveillance and malevolent intent detection capabilities in existing surveillance systems at Naval Installations.			
- Initiated demonstration and validation of identifying and interdicting malevolent waterside threats approaching Navy piers and ships.			
- Initiated advanced command, control, and communication (C3) capabilities for emergency operations and response at Naval Installations.			
<b>FY 2011 Plans:</b>			
Continue, complete, and initiate advanced prototype development and demonstrations as follows:			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> <li>- Complete the demonstration and validation of inclement weather sensors for detecting intruders at installation perimeter and develop requirements for perimeter security procurements.</li> <li>- Complete the integration, demonstration, and validation of VEW Maritime over-the-water analytics into ATFP waterside security systems.</li> <li>- Continue integration and demonstration of counter surveillance and malevolent intent detection capabilities in existing surveillance systems at Naval Installations.</li> <li>- Continue demonstration and validation of identifying and interdicting malevolent threats - watercraft, swimmers, divers, unmanned underwater vessels (UUVs).</li> <li>- Continue advanced emergency operations C3 development and demonstration of mobile operators and interoperability for Joint Basing and Navy Installation locations.</li> <li>- Initiate automated assessment and course of action planning capability for sensor integration.</li> </ul> <p><b><i>FY 2012 Plans:</i></b> Continue, complete, and initiate advanced prototype development and demonstrations as follows:</p> <ul style="list-style-type: none"> <li>- Complete demonstration and validation of counter surveillance and malevolent intent detection in existing ATFP surveillance systems, including WiFi integration.</li> <li>- Complete advanced C3 development and demonstration for mobile operators and system interoperability at ATFP installations.</li> <li>- Continue demonstration and validation of waterside identification and interdiction capabilities for swimmers, divers, and watercraft.</li> <li>- Continue advanced development and demonstration of automated assessment and COA generation for sensor integration.</li> <li>- Complete integration and demonstration of counter surveillance and malevolent intent detection capabilities in existing surveillance systems at Naval Installations.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.997	1.962	1.982

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

**D. Acquisition Strategy**  
Demonstration and validation is conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.

**E. Performance Metrics**  
Quarterly Program Reviews to include funds status, schedule review and assessment of plan to actual.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Force Protection Ashore (CA)	WR	NFESC:Pt Hueneme, CA	1.610	-		-		-		-	0.000	1.610	
Force Protection Ashore (Crane)	WR	NSWC Dahlgren:Panama City, Crane	2.581	-		-		-		-	0.000	2.581	
Force Protection Ashore (VA)	WR	ONR:Arlington, VA	0.300	-		-		-		-	0.000	0.300	
Waterside Intelligent: Operational Test & Evaluation	WR	SPAWAR:San Diego, CA	-	0.205	Nov 2010	-		-		-	Continuing	Continuing	Continuing
Waterside Intelligent Video: Percurement Specification	WR	SPAWAR:San Diego, CA	-	0.060	Nov 2010	-		-		-	Continuing	Continuing	Continuing
Waterbourne Vessel Microwave Interdiction: Technology Assessment	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Waterbourne Vessel Michrowave Interdiction: Concept of Employment	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Waterbourne Vessel Michrowave Interdiction: Spiral Development (LPN)	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	0.216	Oct 2011	-		0.216	Continuing	Continuing	Continuing
Waterbourne Vessel Michrowave Interdiction: Spiral Development (TF&I9)	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	0.227	Oct 2011	-		0.227	Continuing	Continuing	Continuing
Joint Interoperability and Advanced Emergency Mobile Comm: Spiral Development (TF&I9)	WR	SPAWAR:San Diego, CA	-	0.205	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Joint Interoperability and Advanced Emergency Mobile Comm: Deevopmental Test & Evaluation	WR	SPAWAR:San Diego, CA	-	0.205	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Joint Interoperability and Advanced Emergency Mobile Comm: Oerational Test & Evaluation	WR	SPAWAR:San Diego, CA	-	-		0.216	Oct 2011	-		0.216	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Swimmer/Divr Inerdiction: Technology Assessment	WR	SPAWAR:San Diego, CA	-	0.195	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Concept of Employment	WR	SPAWAR:San Diego, CA	-	0.205	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Spiral Development (LPN)	WR	SPAWAR:San Diego, CA	-	0.205	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Spiral Development (TF&I9)	WR	SPAWAR:San Diego, CA	-	-		0.210	Oct 2011	-		0.210	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Developmental Test & Evaluation	WR	SPAWAR:San Diego, CA	-	-		0.227	Oct 2011	-		0.227	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Operational Test & Evaluation	WR	SPAWAR:San Diego, CA	-	-		0.227	Oct 2011	-		0.227	Continuing	Continuing	Continuing
Swimmer/Divr Inerdiction: Procurement Specification	WR	SPAWAR:San Diego, CA	-	-		0.085	Oct 2011	-		0.085	Continuing	Continuing	Continuing
Surveillance/Counter-Surveillance: Procurement Specification	WR	NSWC:Panama City, FL	-	-		0.050	Oct 2011	-		0.050	Continuing	Continuing	Continuing
Automated Sensor Assessment and Course of Action: Technology Assessment	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Automated Sensor Assessment and Course of Action: Concept of Employment	WR	SPAWAR:San Diego, CA	-	0.105	Oct 2010	-		-		-	Continuing	Continuing	Continuing
Automated Sensor Assessment and Course of Action:Spiral Development (LPN)	WR	SPAWAR:San Diego, CA	-	-		0.227	Oct 2011	-		0.227	Continuing	Continuing	Continuing
Automated Sensor Assessment and Course of Action: Spiral Development (TF&I9)	WR	SPAWAR:San Diego, CA	-	-		0.217	Oct 2011	-		0.217	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Inclement Weather Sensor System (mid range IR):Procurement Specification	WR	NSWC:Panama City, FL	-	0.052	Nov 2010	-		-		-	Continuing	Continuing	Continuing
<b>Subtotal</b>			4.491	1.962		1.902		-		1.902			

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Waterbourne Vessel Microwave Interdiction: Government Engineering Support	WR	SPAWAR:San Diego, CA	-	-		0.040	Oct 2011	-		0.040	0.000	0.040	
Joint Interoperability and Advanced Emergency Mobile Comm: Government Engineering Support	WR	SPAWAR:San Diego, CA	-	-		0.040	Oct 2011	-		0.040	0.000	0.040	
<b>Subtotal</b>			-	-		0.080		-		0.080	0.000	0.080	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		4.491	1.962		1.982	-		1.982			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

<b>Proj 3155</b>	
Subproj: Waterside Intelligent Video: Test & Evaluation (DT)	██████████
Subproj: Waterside Intelligent video: Test & Evaluation (OT)	██████████
Subproj: Waterside Intelligent video: Procurement Specification	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Technology Assessment	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Concept of Employment	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Sprial Development (LPR)	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Sprial Development (TF&I9)	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Test & Evaluation (DT)	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Test & Evaluation (OT)	██████████
Subproj: Waterbourne Vessel Microwave Interdiction: Production Specification	██████████
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Technology Assessment	██████████
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: concept of Employment	██████████
	██████████

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Sprial Development (LPR)																												
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications:Spiral Development (TF&I9)																												
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications:Test & Evaluation (DT)																												
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications:Test & Evaluation (OT)																												
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications:Procurement Specification																												
Subproj: Swimmer/Diver Interdiction: Technology Assessment																												
Subproj: Swimmer/Diver Interdiction: concept of Employment																												
Subproj: Swimmer/Diver Interdiction: sprial Development (LPR)																												
Subproj: Swimmer/Diver Interdiction: sprial Development (TF&I9)																												
Subproj: Swimmer/Diver Interdiction: Test & Evaluation (DT)																												
Subproj: Swimmer/Diver Interdiction: Test & Evaluation (OT)																												

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
Subproj: Swimmer/Diver Interdiction: Procurement Specification																												
Subproj: Surveillance/Counter-Surveillance: Spiral Development (LPN)																												
Subproj: Surveillance/Counter-Surveillance: Spiral Development (TF&I9)																												
Subproj: Surveillance/Counter-Surveillance: Spiral Development (DT)																												
Subproj: Surveillance/Counter-Surveillance: Spiral Development (OT)																												
Subproj: Surveillance/Counter-Surveillance: Procurement Specification																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Technology Assessment																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Concept of Employment																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Spiral Development (LPR)																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Spiral Development (TF&I9)																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Test & Evaluation (DT)																												

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
Subproj: Automated Sensor Assessment and Course of Action Planning: Test & Evaluation (OT)																												
Subproj: Automated Sensor Assessment and Course of Action Planning: Procurement Specification																												
Subproj: Inclement Weather Sensor System (mid range IR): Spiral Development (TF&I9)																												
Subproj: Inclement Weather Sensor System (mid range IR): Test & Evaluation (DT)																												
Subproj: Inclement Weather Sensor System (mid range IR): Test & Evaluation (OT)																												
Subproj: Inclement Weather Sensor System (mid range IR): Procurement Specification																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3155</b>				
Subproj: Waterside Intelligent Video: Test & Evaluation (DT)	4	2010	1	2011
Subproj: Waterside Intelligent video: Test & Evaluation (OT)	1	2011	2	2011
Subproj: Waterside Intelligent video: Procurement Specification	2	2011	3	2011
Subproj: Waterbourne Vessel Microwave Interdiction: Technology Assessment	2	2011	3	2011
Subproj: Waterbourne Vessel Microwave Interdiction: Concept of Employment	3	2011	4	2011
Subproj: Waterbourne Vessel Microwave Interdiction: Sprial Development (LPR)	1	2012	3	2012
Subproj: Waterbourne Vessel Microwave Interdiction: Sprial Development (TF&I9)	3	2012	1	2013
Subproj: Waterbourne Vessel Microwave Interdiction: Test & Evaluation (DT)	1	2013	3	2013
Subproj: Waterbourne Vessel Microwave Interdiction: Test & Evaluation (OT)	3	2013	4	2013
Subproj: Waterbourne Vessel Microwave Interdiction: Production Specification	1	2014	2	2014
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Technology Assessment	2	2010	3	2010
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: concept of Employment	3	2010	4	2010
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Sprial Develoment (LPR)	4	2010	1	2011
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Sprial Develoment (TF&I9)	2	2011	3	2011
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Test & Evaluation (DT)	3	2011	4	2011
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Test & Evaluation (OT)	1	2012	2	2012
	2	2012	3	2012

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Subproj: Joint Interoperability and Advanced Emergency Mobile Communications: Procurement Specification				
Subproj: Swimmer/Diver Interdiction: Technology Assessment	2	2011	3	2011
Subproj: Swimmer/Diver Interdiction: concept of Employment	3	2011	4	2011
Subproj: Swimmer/Diver Interdiction: spirial Development (LPR)	4	2011	4	2011
Subproj: Swimmer/Diver Interdiction: spirial Development (TF&I9)	1	2012	4	2013
Subproj: Swimmer/Diver Interdiction: Test & Evaluation (DT)	2	2012	3	2013
Subproj: Swimmer/Diver Interdiction: Test & Evaluation (OT)	3	2012	4	2012
Subproj: Swimmer/Diver Interdiction: Procurement Specification	4	2012	4	2012
Subproj: Surveillance/Counter-Surveillance: Spirial Development (LPN)	2	2010	4	2010
Subproj: Surveillance/Counter-Surveillance: Spirial Development (TF&I9)	4	2010	1	2011
Subproj: Surveillance/Counter-Surveillance: Spirial Development (DT)	2	2011	4	2011
Subproj: Surveillance/Counter-Surveillance: Spirial Development (OT)	4	2011	1	2012
Subproj: Surveillance/Counter-Surveillance: Procurement Specification	1	2012	2	2012
Subproj: Automated Sensor Assessment and Course of Action Planning: Technology Assessment	2	2011	3	2011
Subproj: Automated Sensor Assessment and Course of Action Planning: Concept of Employment	3	2011	4	2011
Subproj: Automated Sensor Assessment and Course of Action Planning: Spirial Development (LPR)	1	2012	3	2012
Subproj: Automated Sensor Assessment and Course of Action Planning: Spirial Development (TF&I9)	3	2012	4	2012
Subproj: Automated Sensor Assessment and Course of Action Planning: Test & Evaluation (DT)	1	2013	3	2013
Subproj: Automated Sensor Assessment and Course of Action Planning: Test & Evaluatin (OT)	3	2013	4	2013

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 3155: <i>Force Protection Ashore</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Subproj: Automated Sensor Assessment and Course of Action Planning: Procurement Specification	4	2013	4	2013
Subproj: Inclement Weather Sensor System (mid range IR): Spiral Development (TF&I9)	1	2010	1	2010
Subproj: Inclement Weather Sensor System (mid range IR): Test & Evaluation (DT)	1	2010	3	2010
Subproj: Inclement Weather Sensor System (mid range IR): Test & Evaluation (OT)	3	2010	4	2010
Subproj: Inclement Weather Sensor System (mid range IR): Procurement Specification	4	2010	1	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	6.054	-	-	-	-	-	-	-	-	0.000	6.054
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Interest Items

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

	FY 2010	FY 2011
<p><b>Congressional Add:</b> Photovoltaic Rooftop Systems for Military Housing</p> <p><b>FY 2010 Accomplishments:</b> New Congressional Add started in FY 2010 (funds received 3rd QTR): Funds have been issued (\$125K) for background research on the state of the technology, research being pursued by industry and academia, and identifying Department of Navy needs to establish a statement of work to expend the balance of funds.</p>	1.195	-
<p><b>Congressional Add:</b> Permanent Magnet Linear Generator Power Buoy System</p> <p><b>FY 2010 Accomplishments:</b> The program will involve numerical and physical modeling to facilitate scaling the Phase I PMLG buoy design from 5kW to full capacity, estimated at between 100 kW and 250 kW. This effort will perform the remaining hydrodynamic modeling, identify the preferred direct drive rotary system, create a functional conceptual design, perform key experimental testing in Oregon State University wave and electric motor research laboratories, complete a preliminary design and design review, and establish the plan for a full scale design and build including cost and energy production estimates. These project and research steps are sequentially accomplished and are necessary to ensure a plan with flexibility and integrity toward identifying a cost effective and survivable wave energy conversion device. Through the sequential development of numerical modeling and experimental tests, the most feasible direct drive rotary power take-off system design concept will be identified. This will then become the subject of a preliminary full-scale design. The preliminary design will be used for system evaluation, energy production estimates, cost estimates, and a preliminary design review. This project will provide the information necessary for the determination of commercial feasibility before proceeding to a complete system design and full scale ocean testing.</p>	1.912	-
<p><b>Congressional Add:</b> Hydrokinetic Power Generator</p> <p><b>FY 2010 Accomplishments:</b> Conduct a technical, operational, environmental and business study to determine the feasibility of generating power at a suitable location in Puget Sound using the Kinetic Hydropower Turbine System, from which power can be transmitted to a local commercial power grid or to a naval base(s) grid.</p>	1.593	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603725N: <i>Facilities Improvement</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
<p>The study, including the explorations for data will address: 1) the presence of suitably strong tidal currents to generate electricity with the kinetic turbines; 2) proximity of such sites to ports and other infrastructure to facilitate cost effective construction and operational sustainment;</p> <p>3) proximity to electrical power grids/interconnections for distribution; 4) adequate avoidance considerations for navigational channels.</p> <p>The study will conclusively identify all issues to enable effective discussions for agreements among Navy and Industry parties for the project continuation with design, fabrication, installation and demonstration of power generation, transmission, and cost effective power generation-grid operations and business activities to serve the Navy needs. Initiate critical design and tests of long lead components concurrently with the feasibility engineering and business study.</p>		
<b>Congressional Add:</b> Regenerative Fuel Cell Back-up Power	1.354	-
<b>FY 2010 Accomplishments:</b> Investigate material issues, hydrogen storage issues, and improved fuel cells to allow and fabrication of a regenerative Proton Exchange Membrane (PEM) fuel power system suitable for tactical applications.		
<b>Congressional Adds Subtotals</b>	6.054	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Quarterly program reviews to include funds status, schedule review, assessment of plan to actual and review of accomplishments and issued to date.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603739N: <i>Navy Logistic Productivity</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	13.400	4.139	4.137	-	4.137	3.817	3.862	3.889	3.915	Continuing	Continuing
2955: <i>JEDMICS</i>	2.817	2.871	2.847	-	2.847	2.893	2.914	2.977	2.987	Continuing	Continuing
3223: <i>Logistics R&amp;D</i>	0.875	0.890	0.926	-	0.926	0.924	0.948	0.912	0.928	Continuing	Continuing
3225: <i>Ordnance PHST</i>	0.386	0.378	0.364	-	0.364	-	-	-	-	0.000	1.128
9999: <i>Congressional Adds</i>	9.322	-	-	-	-	-	-	-	-	0.000	9.322

**A. Mission Description and Budget Item Justification**

Includes development and evaluation of incentive systems for improving the productivity of civilian and military personnel. Identifies barriers to increased productivity and evaluates the effect of removing them. Develops techniques for easing the introduction of new technology to the work place. Identifies and evaluates methods for improving the quality of work-life.

Excludes civilian and military manpower and their related costs and military construction costs which are included in appropriate Management and Support elements in this program.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	15.039	4.139	4.232	-	4.232
Current President's Budget	13.400	4.139	4.137	-	4.137
Total Adjustments	-1.639	-	-0.095	-	-0.095
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.195	-			
• Program Adjustments	-	-	-0.066	-	-0.066
• Section 219 Reprogramming	-0.009	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.029	-	-0.029
• Congressional General Reductions Adjustments	0.005	-	-	-	-
• Congressional Add Adjustments	-1.440	-	-	-	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603739N: *Navy Logistic Productivity*

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

**Project: 9999: *Congressional Adds***

- Congressional Add: *Hawaii National Guard Integrated Information Command System*
- Congressional Add: *Photonic Integration Foundry*
- Congressional Add: *Real-time Tactical Intelligence Collection System*
- Congressional Add: *Thin Film Materials for Advanced Applications*
- Congressional Add: *Highly Integrated Optical Interconnects For Adv AI*
- Congressional Add: *Advanced Naval Logistics*

	FY 2010	FY 2011
	1.275	-
	2.390	-
	1.195	-
	1.275	-
	0.797	-
	2.390	-
Congressional Add Subtotals for Project: 9999	9.322	-
Congressional Add Totals for all Projects	9.322	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2955: <i>JEDMICS</i>	2.817	2.871	2.847	-	2.847	2.893	2.914	2.977	2.987	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

In FY85 Congress directed the Services and Defense Logistics Agency to permanently capture, manage and control engineering data in digital format so it would be available to support competitive spares re-procurement. The Joint Engineering Data Management Information & Control System (JEDMICS) program manages and controls 106,000,000 engineering images and has 25,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 11 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since it brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, Engineering Change Proposal processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> JEDMICS Development	2.774	2.796	2.776
<b>Articles:</b>	0	0	0
<b>Description:</b> Conduct development efforts associated with JEDMICS software releases. Conduct COTS requirements definition, evaluation, integration and testing of annual baseline releases. Conduct technology insertion of the JEDMICS system that is required to protect the \$21B digital data asset managed in JEDMICS.			
These annual releases are necessary to incorporate into JEDMICS changes that are essential to keeping the system running within the Navy's Enterprise. They include Service mandated Information Technology changes, storage capability increases for emerging engineering data formats, changes to accommodate commercial hardware and software end-of-life product obsolescence, and defenses for newly recognized Information Assurance vulnerabilities affecting the systems various software applications.			
<b>FY 2010 Accomplishments:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>		<b>PROJECT</b> 2955: <i>JEDMICS</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Developed and integrated JEDMICS Software Release 3.11. <b>FY 2011 Plans:</b> Develop and integrate JEDMICS Software Release 3.12. <b>FY 2012 Plans:</b> Develop and integrate JEDMICS Software Release 3.13.				
<b>Title:</b> JEDMICS Test		0.025	0.025	0.025
		<b>Articles:</b> 0	0	0
<b>Description:</b> Conduct test and readiness reviews and functional performance tests on JEDMICS system. <b>FY 2010 Accomplishments:</b> FY10: Completed DT of JEDMICS Software Release 3.10. Initiated DT of JEDMICS Software Release 3.11. <b>FY 2011 Plans:</b> Complete DT of JEDMICS Software Release 3.11. Initiate DT of JEDMICS Software Release 3.12. <b>FY 2012 Plans:</b> Complete DT of JEDMICS Software Release 3.12. Initiate DT of JEDMICS Software Release 3.13.				
<b>Title:</b> JEDMICS Evaluation & Review		0.018	0.050	0.046
		<b>Articles:</b> 0	0	0
<b>Description:</b> Conduct technical evaluations and configuration control reviews of JEDMICS system. <b>FY 2010 Accomplishments:</b> Conducted technical evaluations and reviews for JEDMICS Software Release 3.12. <b>FY 2011 Plans:</b> Conduct technical evaluations and reviews for JEDMICS Software Release 3.13. <b>FY 2012 Plans:</b> Conduct technical evaluations and reviews for JEDMICS Software Release 3.14.				
<b>Accomplishments/Planned Programs Subtotals</b>		2.817	2.871	2.847



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>

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

N/A

**D. Acquisition Strategy**

Execution of sole-source negotiated requirements type contract for engineering, design, development and test efforts. Performance-based reviews conducted quarterly by the Project Management Office.

**E. Performance Metrics**

1. Complete testing, integration, & upgrade of three (3) major embedded Commercial Off-the-Shelf (COTS) products.
2. Test & integrate system Information Assurance Vulnerability Management (IAVM) software patch upgrades four (4) times.
3. Complete development, testing, & integration of a minimum twenty (20) corrected high-priority software problem reports.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	C/IDIQ	Various:Various	0.519	0.154	Oct 2010	0.157	Oct 2011	-		0.157	Continuing	Continuing	Continuing
Software Development	SS/T&M	Northrop Grumman Information:McLean, VA	22.429	2.642	Nov 2010	2.619	Nov 2011	-		2.619	Continuing	Continuing	Continuing
Prior Year Support no Longer Funded in Budget Year or Out years	Various	Various:Various	0.216	-		-		-		-	0.000	0.216	
<b>Subtotal</b>			23.164	2.796		2.776		-		2.776			

**Remarks**  
 Remarks: Funds are for development efforts associated with Commercial Off The Shelf (COTS) obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Information & Control System (JEDMICS). Funds are for COTS evaluation, integration, and test and evaluation. The common baseline will be regained and obsolete COTS software and hardware will be replaced. Baseline releases will protect joint interoperability, upgrade operating systems for security patches and supportable versions, support integration to replace obsolete COTS, and upgrade the Oracle database to supportable versions.

SS/Various is a Sole Source - Indefinite Delivery/Requirements contract

NWCF Rate adjustment of \$13K could not be taken against NWCF and had to be taken against Software Development contract. (Only \$14K of NWCF in the line as shown on R-3 and BOCS exhibits.) The rate adjustment was erroneously taken against PU 2955. It should have been taken against PU 3225; which, is 100% NWCF and took no rate adjustment.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various:Various	2.395	0.025	Oct 2010	0.025	Oct 2011	-		0.025	Continuing	Continuing	Continuing
<b>Subtotal</b>			2.395	0.025		0.025		-		0.025			

**Remarks**  
 Supports testing and evaluation of baseline releases in a user environment.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>
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<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management Support	WR	Various:Various	0.213	0.013	Oct 2010	0.014	Oct 2011	-		0.014	Continuing	Continuing	Continuing
Travel	Various	Various:Various	0.250	0.037	Jul 2011	0.032	Jul 2012	-		0.032	Continuing	Continuing	Continuing
Prior Year Mgmt no Longer Funded in Budget Year or Out years	Various	Various:Various	1.083	-		-		-		-	0.000	1.083	
<b>Subtotal</b>			1.546	0.050		0.046		-		0.046			

**Remarks**  
Supports requirements management at the Prime Contractor location and program related travel by government employees.

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	27.105	2.871		2.847		-		2.847			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603739N: *Navy Logistic Productivity*

**PROJECT**

2955: *JEDMICS*

JEDMICS	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Aquisition Milestones</b>																												
Milestones		▲ C10				▲ C11				▲ C12				▲ C13				▲ C14				▲ C15				▲ C16		
Requirements: Service IPT/ECPs				▼ 3.12			▼ 3.13				▼ 3.14				▼ 3.15				▼ 3.16				▼ 3.17				▼ 3.18	
Contract Award	● 2010				● 2011				● 2012				● 2013				● 2014				● 2015				● 2016			
Software & Hardware Evaluation/Integration	Release 3.11				Release 3.12				Release 3.13				Release 3.14				Release 3.15				Release 3.16				Release 3.17			
<b>Test &amp; Evaluation Milestones</b>																												
Risk Assesment			■ 3.11			■ 3.12			■ 3.13			■ 3.14			■ 3.15			■ 3.16			■ 3.17			■ 3.18				
Developmental/Functional Testing				3.11			3.12			3.13			3.14			3.15			3.16			3.17			3.18			
Alpha/Beta Testing	3.10			3.11			3.12			3.13			3.14			3.15			3.16			3.17			3.18			
<b>Deliveries</b>																												
Engineering Change Package		▼ 3.10				▼ 3.11				▼ 3.12				▼ 3.13				▼ 3.14				▼ 3.15				▼ 3.16		

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JEDMICS</b>				
Aquisition Milestones: Milestones: Milestone C10 (MS C10) Release 3.10	2	2010	2	2010
Aquisition Milestones: Milestones: Milestone C11 (MS C11) Release 3.11	2	2011	2	2011
Aquisition Milestones: Milestones: Milestone C12 (MS C12) Release 3.12	2	2012	2	2012
Aquisition Milestones: Milestones: Milestone C13 (MS C13) Release 3.13	2	2013	2	2013
Aquisition Milestones: Milestones: Milestone C14 (MS C14) Release 3.14	2	2014	2	2014
Aquisition Milestones: Milestones: Milestone C15 (MS C15) Release 3.15	2	2015	2	2015
Aquisition Milestones: Milestones: Milestone C16 (MS C16) Release 3.16	2	2016	2	2016
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.12	4	2010	4	2010
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.13	4	2011	4	2011
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.14	4	2012	4	2012
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.15	4	2013	4	2013
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.16	4	2014	4	2014
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.17	4	2015	4	2015
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.18	4	2016	4	2016
Aquisition Milestones: Contract Award: 2010 Contract Award	1	2010	1	2010
Aquisition Milestones: Contract Award: 2011 Contract Award	1	2011	1	2011

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Aquisition Milestones: Contract Award: 2012 Contract Award	1	2012	1	2012
Aquisition Milestones: Contract Award: 2013 Contract Award	1	2013	1	2013
Aquisition Milestones: Contract Award: 2014 Contract Award	1	2014	1	2014
Aquisition Milestones: Contract Award: 2015 Contract Award	1	2015	1	2015
Aquisition Milestones: Contract Award: 2016 Contract Award	1	2016	1	2016
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.11	1	2010	3	2010
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.12	1	2011	3	2011
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.13	1	2012	3	2012
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.14	1	2013	3	2013
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.15	1	2014	3	2014
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.16	1	2015	3	2015
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.17	1	2016	3	2016
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.11	3	2010	3	2010
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.12	3	2011	3	2011
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.13	3	2012	3	2012
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.14	3	2013	3	2013
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.15	3	2014	3	2014
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.16	3	2015	3	2015
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.17	3	2016	3	2016

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 2955: <i>JEDMICS</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.11	4	2010	4	2010
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.12	4	2011	4	2011
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.13	4	2012	4	2012
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.14	4	2013	4	2013
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.15	4	2014	4	2014
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.16	4	2015	4	2015
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.17	4	2016	4	2016
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.10	1	2010	1	2010
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.11	4	2010	1	2011
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.12	4	2011	1	2012
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.13	4	2012	1	2013
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.14	4	2013	1	2014
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.15	4	2014	1	2015
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.16	4	2015	1	2016
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.17	4	2016	4	2016
Deliveries: Engineering Change Package: Engineering Change Package Release 3.10	2	2010	2	2010
Deliveries: Engineering Change Package: Engineering Change Package Release 3.11	2	2011	2	2011
Deliveries: Engineering Change Package: Engineering Change Package Release 3.12	2	2012	2	2012
Deliveries: Engineering Change Package: Engineering Change Package Release 3.13	2	2013	2	2013

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603739N: *Navy Logistic Productivity*

**PROJECT**

2955: *JEDMICS*

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Deliveries: Engineering Change Package: Engineering Change Package Release 3.14	2	2014	2	2014
Deliveries: Engineering Change Package: Engineering Change Package Release 3.15	2	2015	2	2015
Deliveries: Engineering Change Package: Engineering Change Package Release 3.16	2	2016	2	2016



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3223: <i>Logistics R&amp;D</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3223: <i>Logistics R&amp;D</i>	0.875	0.890	0.926	-	0.926	0.924	0.948	0.912	0.928	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Stable annual funding is required to facilitate implementation and execution of a robust, flexible Logistics R&D program that will provide the means for Naval Supply Systems Command (NAVSUP) to effectively pursue solutions to mission-related capability/technology gaps. The NAVSUP Logistics R&D program has an established infrastructure and business process for ensuring that R&D funds are applied to projects that address high priority enterprise needs established in accordance with OPNAV goals and the NAVSUP Commander's Guidance.

From a process perspective, Log R&D investments are governed by a NAVSUP enterprise-wide Executive Steering Group (ESG) chaired by the NAVSUP Vice Commander, and comprised of SES and Command leadership representatives. The ESG ratifies capability/technology gaps identified by all activities within the enterprise, and then assesses and prioritizes all proposed Log R&D initiatives in accordance with their potential for filling the established gap and generating return on investment.

The established Log R&D business management process has currently identified capability/technology gaps in the following general areas: 1) the need to develop technology enhancements promoting the movement of shipboard supply operations ashore, especially as it relates to optimally manned ships, 2) developing and/or modernizing shipboard equipment, material or processes for which NAVSUP exercises Technical Authority, 3) developing and modernizing Information Technology (IT) and Automatic Identification Technology (AIT) applications to enhance performance of supply chain management and logistics functions (e.g., remote diagnostics/prognostics, in-transit visibility, unique item identification) that are not supported by Navy ERP, and 4) collaborating with acquisition program managers to reduce total ownership costs. This modest R&D investment will establish a NAVSUP Logistics R&D Program to explore additional technologies and significantly increase potential cost savings.

Examples of specific issues/projects that are under consideration for investment of Log R&D funding as a result of the FY10 NAVSUP capability gap and initiative review include: Automated inventory management system; Shipboard ozone laundering; Improved general purpose protective equipment (helmet protection and anti-vibration gloves); Non-plastic waste bags; Counterfeit parts detection methodology; Afloat automatic identification technology architecture.

This list of potential projects for addressing capability gaps will be updated and prioritized over time, under the oversight of the NAVSUP Log R&D ESG, to ensure that funds allocated provide the highest return on investment consistent with Navy/NAVSUP goals and objectives.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Automated Inventory Management System	0.290	0.541	0.564
<b>Articles:</b>	0	0	0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3223: <i>Logistics R&amp;D</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Automated Inventory Management System. Use of commercial warehouse management software and wireless Automatic Identification Technologies (AIT) to streamline afloat supply commodity management on large aviation platforms (CVN/LHA/LHD). Funds to provide initial year of multi-year Integrated Product &amp; Process Development (IPPD) effort.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of objectives identified in FY10.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of objectives identified in FY10</p>				
<p><b><i>Title:</i></b> Shipboard Ozone Laundering</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>FY 2010 Accomplishments:</i></b> Shipboard ozone laundering. Development and test of ozone laundering for shipboard use to reduce total operating costs and reduce environmental impact (energy and chemical) usage.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of FY10 Plans.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of FY10 plans if necessary</p>		0.138 0	0.080 0	0.083 0
<p><b><i>Title:</i></b> Improved General Purpose Protective Equipment</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>FY 2010 Accomplishments:</i></b> Improved General Purpose Protective Equipment. Develop a helmet for shipboard, facility &amp; aircraft maintenance personnel that incorporates hearing protection, air supply, face protection and a means to communicate; Develop anti-vibration protective gloves for maintenance, repair and construction personnel. Follow-on projects in FY11.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of FY10 projects.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of FY10 projects if necessary.</p>		0.089 0	0.052 0	0.054 0
<p><b><i>Title:</i></b> Non-Plastic Waste Bags</p> <p align="right"><b><i>Articles:</i></b></p>		0.134 0	0.083 0	0.086 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3223: <i>Logistics R&amp;D</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Non-plastic waste bags. Develop an alternative to plastic trash bags with similar performance characteristics, yet not containing plastic, in order to decrease the amount of plastic waste required to be processed aboard Navy vessels.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of FY10 Projects.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of FY10 Projects if necessary.</p>				
<p><b><i>Title:</i></b> Counterfeit Parts Detection Methodology</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>FY 2010 Accomplishments:</i></b> Counterfeit parts detection methodology. Develop a methodology utilizing existing databases and tools for the detection and mitigation of counterfeit parts in the naval aircraft supply chain. Mitigating counterfeit parts will reduce maintenance and AVDLR costs, while improving safety.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of FY10 Projects.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of FY10 Projects if necessary.</p>		0.112 0	0.067 0	0.070 0
<p><b><i>Title:</i></b> Afloat Automatic Identification Technology Architecture</p> <p align="right"><b><i>Articles:</i></b></p> <p><b><i>FY 2010 Accomplishments:</i></b> Afloat Automatic Identification Technology architecture. Establish an afloat AIT architecture that parallels the ashore solution and provides better visibility and reduces shipboard manning requirements. Funds to provide initial year of multi-year Integrated Product &amp; Process Development (IPPD) effort.</p> <p><b><i>FY 2011 Plans:</i></b> Continuation of FY10 projects.</p> <p><b><i>FY 2012 Plans:</i></b> Continuation of FY10 Projects if necessary</p>		0.112 0	0.067 0	0.069 0
<b>Accomplishments/Planned Programs Subtotals</b>		0.875	0.890	0.926

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3223: <i>Logistics R&amp;D</i>

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

N/A

**D. Acquisition Strategy**

The acquisition strategy for each individual sub-project (below) has not yet been determined and will be determined during FY10.

Automated Inventory Management System: Use of commercial warehouse management software and wireless Automatic Identification Technologies (AIT) to streamline afloat supply commodity management on large aviation platforms (CVN/LHA/LHD). Funds to provide initial year of multi-year Integrated Product & Process Development (IPPD) effort.

Shipboard Ozone Laundering: Development and test of ozone laundering for shipboard use to reduce total operating costs and reduce environmental impact (energy and chemical) usage.

Improved General Purpose Protective Equipment: Develop a helmet for shipboard, facility & aircraft maintenance personnel that incorporates hearing protection, air supply, face protection and a means to communicate; Develop anti-vibration protective gloves for maintenance, repair and construction personnel.

Non-Plastic Waste Bags: Develop an alternative to plastic trash bags with similar performance characteristics, yet not containing plastic, in order to decrease the amount of plastic waste required to be processed aboard Navy vessels.

Counterfeit Parts Detection Methodology: Develop a methodology utilizing existing databases and tools for the detection and mitigation of counterfeit parts in the naval aircraft supply chain. Mitigating counterfeit parts will reduce maintenance and AVDLR costs, while improving safety.

Afloat Automatic Identification Technology Architecture: Establish an afloat AIT architecture that parallels the ashore solution and provides better visibility and reduces shipboard manning requirements. Funds to provide initial year of multi-year Integrated Product & Process Development (IPPD) effort.

**E. Performance Metrics**

TBD

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3225: <i>Ordnance PHST</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3225: <i>Ordnance PHST</i>	0.386	0.378	0.364	-	0.364	-	-	-	-	0.000	1.128
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Ordnance Packaging Handling Storage and Transportation (PHST) RDT&E resources focus on developing new Ordnance Handling Equipment (OHE) to replace the 25+ year old equipment presently used by the Fleet for Underway Replenishment (UNREP) operations. This OHE is a high cost and maintenance item. Development of new OHE takes advantage of new technology such as the CH-60 helicopter, which has double the lift capacity of the CH-46. OHE is used daily by the war fighter to conduct Connected Replenishment (CONREP) and Vertical Replenishment (VERTREP). A sample of these efforts includes redesigning the MK 105 sling to increase efficiency during VERTREP, condensing entire families of slings down to fewer and more efficient pieces of gear, developing a stream strongback and the associated equipment necessary to complement, not compromise, the Heavy Underway Replenishment (UNREP) initiative of the future, etc. The new sling designs being developed take advantage of present and future manufacturing and operational capabilities. This initiative improves availability, reliability, and maintainability while reducing overall cost. The end result will be a Fleet that has been properly equipped to conduct UNREP with more efficiency.

The PHST Center is developing a baseline of the current naval ordnance PHST logistics system. This baseline will identify inefficiencies and recommend hardware and operational enhancements in the area of modal change, thus providing an investment strategy for future Naval PHST operations by conducting an end-to-end study.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Ordnance PHST Development	0.386	0.378	0.364
<b>Articles:</b>	0	0	0
<b>Description:</b> Develop new Ordnance Handling Equipment (OHE) to replace the 25+ year old equipment presently in Fleet use to include: 1) Re-design Mk 105 Pendant Sling to optimize cost and throughput during Vertical Replenishment; 2) New concept development to replace 12x12 and 14x14 ft. Nylon Cargo Nets ; 3) Design a new STREAM Strongback to compliment the Fleet's Heavy UNREP initiative of the future; 4) Condense Mk 85, 86, 87, and 100 family of pallet slings into fewer pieces gear to optimize cost and efficiency during CONREP; and 5) Re-design the Mk 45 Handlift Truck. Ordnance Packaging Handling Storage and Transportation (PHST) will additionally conduct a baseline study of the current Naval PHST logistics system to identify inefficiencies and recommend hardware and operational enhancements.			
<b>FY 2010 Accomplishments:</b> Developed new MK-105 Pendant Sling. Developed 8X8, 12X12, and 14X14 ordnance specific nylon cargo nets. Began baseline work on current PHST Logistics Study, Began redesign of MK-45 Handlift Truck.			
<b>FY 2011 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 3225: <i>Ordnance PHST</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Design new Heavy Lift Stream Strongback. Condense MK-85 Series Pallet Slings to fewer pieces. Complete redesign of MK-45 Handlift Truck. Develop recommended list of hardware and operational enhancements from Baseline Logistics Study.  <b><i>FY 2012 Plans:</i></b> Begin investigating the Mk 24/137 LAMPS Dolly. Field test a new Mk 105 replacement. Work on potential improvements cited in the PHST baseline study. Develop a Mk 85 series replacement. Evaluate a course of action for the heavy Standard Tension Replenishment Alongside Method (STREAM) strongback. A heavy STREAM strongback is a metal rigid item with a 12,000 lb capacity that acts as an intermediate to a ship's STREAM and other handling equipment and provides a means for attaching handling equipment during loading/offloading or connected transfer-at-sea operations.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.386	0.378	0.364

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

**D. Acquisition Strategy**  
Execution of in-house engineering, design, development and test efforts. Performance-based reviews conducted quarterly or as required by the Project Management Office.

- E. Performance Metrics**
1. Conduct Operational Testing (OT) of a Mk 105 Sling Replacement
  2. Improve 4 of the 8 areas of concern from the PHST Baseline Study
  3. Identify 3 problem areas inherent in the Mk 24/137 LAMPS Dolly design
  4. Conduct a successful Preliminary Design Review (PDR) for a Mk 85 Series sling replacement

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	9.322	-	-	-	-	-	-	-	-	0.000	9.322
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Congressional Add

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Hawaii National Guard Integrated Information Command System <b>FY 2010 Accomplishments:</b> Provide relevant, real-time situational information to all levels of command from the Hawaii National Guard to Hawaii State Civil Defense to civilian responders in the field.	1.275	-
<b>Congressional Add:</b> Photonic Integration Foundry <b>FY 2010 Accomplishments:</b> Develop enabling photonic integrated circuit technologies required for next generation Navy avionics.	2.390	-
<b>Congressional Add:</b> Real-time Tactical Intelligence Collection System <b>FY 2010 Accomplishments:</b> Improve existing language translation equipment by adding larger vocabularies and more translation capability.	1.195	-
<b>Congressional Add:</b> Thin Film Materials for Advanced Applications <b>FY 2010 Accomplishments:</b> Continued development of X-ray Lithography (XRL) / Collimated Plasma Lithography (CPL) mask materials/technology.	1.275	-
<b>Congressional Add:</b> Highly Integrated Optical Interconnects For Adv AI <b>FY 2010 Accomplishments:</b> Continue to develop optical interconnects integrated into printed circuit boards typically used by the electronics industry.	0.797	-
<b>Congressional Add:</b> Advanced Naval Logistics <b>FY 2010 Accomplishments:</b> Continued implementation within Navy ERP framework and addressing additional, previously unidentified capabilities requirements. Investigation of applicability of this tool as a standard requirements determination approach for all DOD Services.	2.390	-
<b>Congressional Adds Subtotals</b>	9.322	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603739N: <i>Navy Logistic Productivity</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>

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

N/A

**D. Acquisition Strategy**

Not required for Congressional Adds

**E. Performance Metrics**

Not required for Congressional Adds



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	6.644	4.385	-	-	-	-	-	-	-	0.000	11.029
2133: <i>QRCC</i>	3.401	3.439	-	-	-	-	-	-	-	0.000	6.840
2184: <i>Force Advanced Warfare Concept Technology</i>	3.243	0.946	-	-	-	-	-	-	-	0.000	4.189

**A. Mission Description and Budget Item Justification**

This program incorporates efforts dedicated to the enhancement of ship defense against Anti-Air Warfare (AAW) and other evolving threats. Its primary focus is on the development of technologies, systems, and procedures necessary to defeat the evolving Anti-Ship Cruise Missile (ASCM) threat and then it expands to allow for application of these technologies in other warfighting areas. These projects focus on ship defense improvements through the development of advanced concepts and capabilities that will enhance both defense in depth of ships in a force and self defense of individual ships in a littoral war-fighting environment.

Quick Reaction Combat Capability (QRCC): The Requirements & Analysis Working Group (RAWG) was established in 1992 to conduct analysis of AAW ship self-defense capabilities and to establish requirements for ship class specific ASCM self-defense to support Navy AAW investment decisions. The RAWG is an independent and objective analysis team that constitutes the National expertise in force and self-defense capabilities assessment in AAW and Surface Warfare (SUW). RAWG maintains a database of ship system and ship class performance against ASCM and SUW threats to support rapid response to tasking.

Force Advanced Warfare Concept Technology (FACT), Project 2184, demonstrates concepts and capabilities that will enhance the warfighting ability of ships and aircraft and enable the coupling of the Force into a single, distributed weapon system through more effective use of tactical data, and force sensors and weapons.

During FY10, FACT's Ocean Surveillance Initiative (OSI) continued prototyping of technologies to provide a complete, accurate, wide area, persistent surface track picture in a tactical theater of interest. The emphasis of these technologies was on the planning and detection capabilities required to simultaneously track all surface targets within view of the radar. During FY10 and FY11, the Innovation Team began development and prototyping of technologies to provide a Strike Group with a Geo-Referenced Common Tactical Maritime Picture (CTMP), incorporating several thousand square miles of accurate, real time surface track data from aircraft such as Broad Area Maritime Surveillance Aircraft (BAMS), P-3, P-8, MH-60R and Fire Scout Unmanned Air Vehicle (UAV). FACT will begin to develop technologies for integration of the tactical surface picture in to surface combat systems such as Aegis and Ship Self Defense System (SSDS) and technologies to disseminate the Common Tactical Maritime Picture amongst the Carrier Strike Group/Expeditionary Strike Group (CSG/ESG). The Innovation Team will also analyze and assess the feasibility of wide area Anti-Submarine Warfare (ASW) sensor netting.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	6.931	4.385	3.476	-	3.476
Current President's Budget	6.644	4.385	-	-	-
Total Adjustments	-0.287	-	-3.476	-	-3.476
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.238	-			
• Program Adjustments	-	-	-3.476	-	-3.476
• Section 219 Reprogramming	-0.049	-	-	-	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Ended the program starting in 2012.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>	<b>PROJECT</b> 2133: <i>QRCC</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2133: <i>QRCC</i>	3.401	3.439	-	-	-	-	-	-	-	0.000	6.840
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

RAWG was established in 1992 to conduct analysis of AAW ship self-defense capabilities and to establish requirements for ship class specific ASCM self-defense to support Navy AAW investment decisions. The RAWG is an independent and objective analysis team that constitutes the National expertise in force and self-defense capabilities assessment in AAW and SUW and maintains a database of ship system and ship class performance against ASCM and SUW threats to support rapid response to tasking.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> QRCC	3.401	3.439	-
<b>Articles:</b>	0	0	
<b>FY 2010 Accomplishments:</b>			
RAWG completed analysis of:			
1) Pre and post DDG 51 modernization capabilities			
2) The delta in Cruiser Guided Missile (CG) performance in Air Defense and Integrated Air Missile Defense (IAMD), with and without the Multi Mission Signal Processor (MMSP) and other CG Mod combat system updates.			
3) LHD 1 upgrade options			
4) Updated threats and impact on current configurations			
5) Impact of RAM Block 2 installation on performance of LSD 41/49			
RAWG also responded to several high priority taskers from Navy leadership:			
1) Jan 2010: Navy tasked the RAWG to compare the performance of specific LHD 2-6 combat system options against the CAPSTONE requirements.			
2) Feb 2010: Navy tasked N2/N6 Electronic Warfare (EW/Intel) to address impact of updated threat assessment on Aegis capabilities and limitations; Navy requested short-notice RAWG assessment.			
3) Apr 2010: Nulka configuration and launcher placement analysis to support Joint Strike Fighter integration on LHA 6 class ships.			
4) May 2010 Navy tasked RAWG to review impacts on Aegis and SSDS performance based on a recent ASCM threat assessment update.			
<b>FY 2011 Plans:</b>			
RAWG will continue to assess the impact of RAM Block 2 installation on performance of CVNs 71 and 78, LHA 6 and LPD 24;			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>	<b>PROJECT</b> 2133: <i>QRCC</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Determine SSDS improvement in engagement performance against specific threats using proposed CEC-SSDS changes; investigate degradation of SPY resources available for AAW, as well as stand alone vs integrated w/Aegis; evaluate baseline Nulka performance for various ship classes and integrate hard kill and soft kill analyses; investigate advanced Electronic Support (ES) system (SEWIP BLK 2) integration approaches into combat systems and quantify impact to hardkill and softkill effectiveness (NULKA, RAM, Adaptive Engagement Control (AEC) enabled Hard Kill (HK) engagements).			
<b>Accomplishments/Planned Programs Subtotals</b>	3.401	3.439	-

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

N/A

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

- 1) Successfully complete 90% of assigned self-defense analysis tasks in support of Navy program reviews.
- 2) Successfully respond to 90% of all emergent tasks in support of Navy self-defense analysis questions.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy									<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>				<b>PROJECT</b> 2184: <i>Force Advanced Warfare Concept Technology</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2184: <i>Force Advanced Warfare Concept Technology</i>	3.243	0.946	-	-	-	-	-	-	-	0.000	4.189
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Force Advanced Warfare Concept Technology (FACT) Program is an advanced development effort designed to demonstrate Advanced Force concepts and capabilities that will significantly improve our Force defense in depth, including both local area and self defense capabilities against current and future threats. FACT improvements are designed to enhance the warfighting ability of ships and aircraft and to enable coupling of the Force into a single, distributed weapon system and towards more effective use of tactical data and the cooperative use of all the force sensors and weapons. These capabilities will provide the ship offensive flexibility needed to meet the threat brought about by increasing numbers of highly sophisticated weapons held by potentially hostile third world countries. FACT defines requirements and develops prototype systems or modifications to existing systems to test new concepts for the coordination of Force operations. FACT is a model innovation cell which consistently delivers advanced war-fighting capability that addresses current Fleet shortfalls and needs quickly and cost effectively. Some examples of prototype systems now in production are AN/SPS-48C Detection Data Converter, AN/SPS-48E Environmental Control Feature, Shipboard Gridlock System/Automatic Correlation (SGS/AC) and Dial-a-Track Quality (Link-11 Quality Selection). Other FACT developments include the Automatic Identification System and the Multi-Frequency Link-11 capability; Dual Net Multi-Frequency Link-11 Force Threat Evaluation Weapons Assignment; the prototype Area Air Defense Commander and the Joint Targeting Attack and Assessment Capability (JTAAC).

During FY10, FACT's OSI continued prototyping of technologies to provide a complete, accurate, wide area, persistent surface track picture in a tactical theater of interest. The emphasis of these technologies was on the planning and detection capabilities required to simultaneously track all surface targets within view of the radar. During FY10 and FY11, the Innovation Team began development and prototyping of technologies to provide a Strike Group with a Geo-Referenced CTMP, incorporating several thousand square miles of accurate, real time surface track data from aircraft such as BAMS, P-3, P-8, MH-60R and Fire Scout UAV. FACT will begin to develop technologies for integration of the tactical surface picture in to surface combat systems such as Aegis and SSDS and technologies to disseminate the CMTMP amongst the CSG/ESG. The Innovation Team will also analyze and assess the feasibility of wide area ASW sensor netting.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Force Advanced Warfare Concept Technology	3.243	0.946	-
<b>Articles:</b>	0	0	
<b>Description:</b> Conduct critical FACT initiative proof of concept experiments. Provide top level programmatic support, technical analysis and assist in the development processes, procedures and documentation that impact the execution of the FACT program requirements. On-going development of an OSI prototype which will leverage the end to end capability realized by JTAAC and has the objective goal of attaining a tactically significant probability of detection, continuous track, and correct classification of small and medium sized vessels at sea state 5. Conduct critical experiments in support of the OSI.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>	<b>PROJECT</b> 2184: <i>Force Advanced Warfare Concept Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p><b><i>FY 2010 Accomplishments:</i></b> The Innovation Team successfully developed and demonstrated a multi-platform, multi-sensor data fusion capability which is the foundation to building and disseminating the CMTP. Developed roadmap for OSI implementation into Carrier-Based Tactical Support Center (CVTS) as well as the Fire Scout UAV.</p> <p><b><i>FY 2011 Plans:</i></b> The Innovation Team will continue to develop technologies for a proof of concept demonstration of multi-platform, multi-sensor data fusion algorithms. The Innovation Team will continue to analyze and development of the concepts and technologies necessary to merge the CTMP data to create and disseminate the CTMP among the USN battlegroup in a particular theater of interest. The Innovation Team will continue to analyze and provide options for wide area ASW sensor netting.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	3.243	0.946	-

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

**D. Acquisition Strategy**  
N/A

**E. Performance Metrics**  
Quarterly program reviews

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603755N: <i>Ship Self Defense - DEM/VAL</i>	<b>PROJECT</b> 2184: <i>Force Advanced Warfare Concept Technology</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF	JHU/APL:Laurel, MD	16.566	0.696	Nov 2010	-		-		-	0.000	17.262	
<b>Subtotal</b>			16.566	0.696		-		-		-	0.000	17.262	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Costs	C/CPAF	DELTA RESOURCES:Arlington, VA	6.294	0.250	Nov 2010	-		-		-	0.000	6.544	
<b>Subtotal</b>			6.294	0.250		-		-		-	0.000	6.544	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Workforce Development Fund	Various	Various:Various	0.036	-		-		-		-	0.000	0.036	
<b>Subtotal</b>			0.036	-		-		-		-	0.000	0.036	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			22.896	0.946		-		-		-	0.000	23.842	

**Remarks**

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>										
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603790N: <i>NATO Research and Deve</i>										
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	9.804	9.196	9.140	-	9.140	9.456	9.642	9.851	10.045	Continuing	Continuing
2293: <i>NATO Cooperative R &amp; D</i>	9.804	9.196	9.140	-	9.140	9.456	9.642	9.851	10.045	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

In accordance with Title 10 United States Code, Section 2350a, this Program Element (PE) provides funding for research and development (R&D) programs with approved allies under international agreements. These funds can only be applied to work efforts in the U.S., and the Under Secretary of Defense, Acquisition and Technology and Logistics (USD, AT&L) must approve each international agreement. The program provides funds for multiple projects under separately approved international agreements as well as funds that support the establishment of such agreements. Each international agreement is summarized in a separate Summary Statement of Intent (SSOI) that also states why the project serves to increase the defense capabilities of the U.S. The SSOI is used to obtain Project approval by the Department of the Navy and the Office of the Secretary of Defense.

This program historically does not meet established execution benchmarks. NATO R&D cooperative programs differ from other Research, Development, Test and Evaluation (RDT&E) programs because issuance of funding from this PE coincides with the signature of international agreements. These signatures occur throughout the fiscal year and often encounter unexpected delays during the staffing and negotiation phases of agreement processing prior to signature.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	10.152	9.196	9.962	-	9.962
Current President's Budget	9.804	9.196	9.140	-	9.140
Total Adjustments	-0.348	-	-0.822	-	-0.822
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.107	-			
• SBIR/STTR Transfer	-0.361	-			
• Program Adjustments	-	-	-0.509	-	-0.509
• Section 219 Reprogramming	-0.093	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.313	-	-0.313
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603790N: <i>NATO Research and Deve</i>	<b>PROJECT</b> 2293: <i>NATO Cooperative R &amp; D</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2293: <i>NATO Cooperative R &amp; D</i>	9.804	9.196	9.140	-	9.140	9.456	9.642	9.851	10.045	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

In accordance with Title 10 U.S. Code Section 2350a, this project provides funding for research and development projects with approved allies under international agreements. These funds can only be applied to work efforts in the U.S., and the Office of Secretary of Defense must approve each international agreement. The program provides funds for multiple projects under separately approved international agreements as well as funds that support the establishment of such agreements. Each international agreement is summarized in a separate SSOI which also states why the project serves to increase the conventional defense capabilities of the U.S. The SSOI is used to obtain project approval by the Department of the Navy and the Office of the Secretary of Defense.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> NATO Cooperative R & D	9.804	9.196	9.140
<b>Articles:</b>	0	0	0
<b>FY 2010 Accomplishments:</b>			
<ul style="list-style-type: none"> <li>- Continued to plan and/or support approved cooperative projects.</li> <li>- Continued support for Advanced Non-Acoustic Sensing Technologies cooperative project between the U.S. and Sweden.</li> <li>- Continued support for the Defensive Aids Suite/Next Generation Torpedo Defense cooperative project between the U.S. and the U.K.</li> <li>- Continued support for Enhancing and Validating the Dynamic System Mechanics Advanced Simulation (DYSMAS) to meet Emerging Modeling and Simulation Changes cooperative project between the U.S. and Germany.</li> <li>- Continued support for the Failure Prediction of Composite and Hybrid Naval Structures (DYCOSS-3D) cooperative project between the U.S. and the Netherlands.</li> <li>- Continued support for the Surface Combatant Aluminum Structure Design cooperative project between the U.S., Finland and Germany.</li> <li>- Continued support for the Submarine Hydrodynamics Maneuvering &amp; Control cooperative project between the U.S. and the U.K.</li> <li>- Continued support for Torpedo Guidance and Control; False Targets cooperative project between the U.S. and the U.K.</li> <li>- Completed support for the Next Generation Infra-Red Search and Track (NGIRST) project among the U.S. and multiple nations.</li> <li>- Completed support for the Coalition Maritime Missile Defense Battle Management C4I (BMC4A PA2) Architecture Definition cooperative project between the U.S. and multiple nations.</li> <li>- Initiated support for the Submarine Sonar Telemetry cooperative project between the U.S. and the U.K.</li> <li>- Initiated support for the Defensive Aids Suite project between the U.S. and the U.K.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603790N: <i>NATO Research and Deve</i>	<b>PROJECT</b> 2293: <i>NATO Cooperative R &amp; D</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<ul style="list-style-type: none"> <li>- Initiated support for the Advanced Electromagnetic Silencing project between the U.S. and the U.K.</li> <li>- Initiated support for the Submarine Communication Buoy project between the U.S. and the U.K.</li> <li>- Initiated support for the Maritime Missile Defense Modeling and Simulation Synthetic Interoperability Testing and Evaluation (Site) cooperative project between the U.S. and multiple nations.</li> <li>- Planned support for the Alternate Material Propeller cooperative project between the U.S. and Australia.</li> <li>- Planned support for the Coalition Distributed Engineering Plant Baseline Architecture (CDEP-BA) cooperative project between the U.S. and multiple nations.</li> <li>- Planned support for the Coalition Network for Secure Information Sharing (CoNSIS) cooperative project between the U.S. and multiple nations.</li> <li>- Planned support for the Six Degrees of Freedom (6DOF) Amendment 1 cooperative project between the U.S. and Italy.</li> <li>- Planned support for the Submarine Advanced Autopilot project between the U.S. and U.K.</li> <li>- Planned support for the Ice Capable Surface Combatant project between the U.S. and Finland.</li> <li>- Planned support for the Ultra Heavy-Lift Amphibious Connector (UHAC) project between the U.S. and Singapore.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue to plan and/or support FY10 approved cooperative projects less those noted as completed above.</li> <li>- Plan support for the Submarine Composite Structures project between the U.S. and the U.K.</li> <li>- Plan support for the Fiber Optic Mini Acoustic project between the U.S. and Australia.</li> <li>- Plan support of Ballistic Missile Defense Open Architecture Research project between the U.S. and Japan.</li> </ul> <p><b><i>FY 2012 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue to plan and/or support FY11 approved cooperative projects.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	9.804	9.196	9.140

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

N/A

**D. Acquisition Strategy**

Not applicable.

**E. Performance Metrics**

The intent of the North Atlantic Treaty Organization (NATO) cooperative R&D program is to provide "start-up" funds for projects seeking allied contributions into cooperative research and development projects with the U.S. The primary metric used in the program is foreign contributions into projects supported by the program. The performance goal is met if total foreign contributions into projects exceed total NATO cooperative R&D program funds by over 100%.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603790N: <i>NATO Research and Deve</i>	<b>PROJECT</b> 2293: <i>NATO Cooperative R &amp; D</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test and Evaluation	C/FP	NAVSEA:Washington Navy Yard, DC	6.367	2.040	Sep 2011	1.325	Sep 2012	-		1.325	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	NSWC:West Bethesda, MD	4.981	3.140	Sep 2011	3.428	Sep 2012	-		3.428	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	NUWC:Newport, RI	1.002	-		0.350	Sep 2012	-		0.350	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	SPAWAR:San Diego, CA	1.203	0.650	Sep 2011	1.750	Sep 2012	-		1.750	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	NAVAIR:Patuxent River, MD	0.500	0.500	Sep 2011	-		-		-	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	NRL:Washington, DC	0.500	0.400	Sep 2011	1.500	Sep 2012	-		1.500	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	NAWC:Point Mugu, CA	2.500	-		-		-		-	Continuing	Continuing	Continuing
Developmental Test and Evaluation	C/FP	Miscellaneous:Philadelphia, PA	3.817	2.466	Sep 2011	0.787	Sep 2012	-		0.787	Continuing	Continuing	Continuing
<b>Subtotal</b>			20.870	9.196		9.140		-		9.140			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
ACQ Workforce Fund	Various	Various:Various	0.049	-		-		-		-	0.000	0.049	
<b>Subtotal</b>			0.049	-		-		-		-	0.000	0.049	

	<b>Total Prior Years Cost</b>	<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		20.919	9.196		9.140		-	9.140			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603790N: <i>NATO Research and Deve</i>	<b>PROJECT</b> 2293: <i>NATO Cooperative R &amp; D</i>
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Proj 2293	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
International agreements																												
Empty grid for data entry																												

2012PB - 0603790N - 2293

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603790N: <i>NATO Research and Deve</i>	<b>PROJECT</b> 2293: <i>NATO Cooperative R &amp; D</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NATO Agreements</i></b>				
International Agreements	1	2010	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>								
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			PE 0603795N: <i>Land Attack Tech</i>								
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	9.733	0.905	0.421	-	0.421	0.427	0.340	0.284	0.291	Continuing	Continuing
2325: <i>Naval Fires Control System</i>	1.166	0.905	0.421	-	0.421	0.427	0.340	0.284	0.291	Continuing	Continuing
9999: <i>Congressional Adds</i>	8.567	-	-	-	-	-	-	-	-	0.000	8.567

**A. Mission Description and Budget Item Justification**

The Naval Fires Control System (NFCS) (Project 2325) - Automates shipboard land attack battle management duties to be interoperable and consistent with joint C4ISR systems. This shipboard system will significantly improve the Navy's ability to support Operational Maneuver from the Sea (OMFTS).

76mm Swarmbuster Capability (Project 9D60A) - (FY10) Supports efforts to integrate the MK 75 with Close-In Weapons System (CIWS) for ASuW capability against swarming boats.

Hybrid Propellant for Medium and Large Caliber Ammunition (Project 10C130) - (FY10) Propellant and primer technologies developed under this add will be integrated into future acquisitions of Navy propelling charges.

MK38 MOD 2 at Sea Testing (Project 10C204) - (FY10) Funding supports demonstration of the feasibility/suitability of integrating a 10KW laser onto the MK38 Mod 2 Machine Gun System.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	6.809	0.905	0.548	-	0.548
Current President's Budget	9.733	0.905	0.421	-	0.421
Total Adjustments	2.924	-	-0.127	-	-0.127
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	2.991	-			
• SBIR/STTR Transfer	-0.042	-			
• Program Adjustments	-	-	-0.077	-	-0.077
• Section 219 Reprogramming	-0.025	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.050	-	-0.050

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
 1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
 PE 0603795N: *Land Attack Tech*

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Hybrid Propellant for Medium and Large Caliber Ammunition*

Congressional Add: *MK 38 MOD 2 AT SEA TESTING*

Congressional Add: *76mm Swarbuster Capability*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	3.983	-
	2.991	-
	1.593	-
Congressional Add Subtotals for Project: 9999	8.567	-
Congressional Add Totals for all Projects	8.567	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603795N: <i>Land Attack Tech</i>	<b>PROJECT</b> 2325: <i>Naval Fires Control System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2325: <i>Naval Fires Control System</i>	1.166	0.905	0.421	-	0.421	0.427	0.340	0.284	0.291	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Naval Fires Control System (NFCS) covers the mission planning and coordination for current and future Naval Surface Fire Support system requirements. NFCS plans, coordinates and manages the firing of Naval Surface Fires Support (NSFS) weapon systems including the 5"/62 caliber gun and Conventional Munitions. The NFCS phase I is interfacing with the Advanced TOMAHAWK Weapons Control Systems (ATWCS) and the Tactical TOMAHAWK Weapons Control Systems (TTWCS) in order for NFCS to share the Advanced Tactical Display Console (ATDC) with ATWCS and TTWCS. Funding provides software and system engineering analysis and development, reuse and integration of government and commercial computer programs to support extended range munitions and other naval weapon applications.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Software/System Engineering</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Funding provided software and system engineering analysis and development. Reuse and integration of government and commercial computer programs to support extended range munitions and other naval weapon applications.</p> <p><b>FY 2011 Plans:</b> Funding will provide software and system engineering analysis and development. Reuse and integration of government and commercial computer programs to support extended range munitions and other naval weapon applications.</p> <p><b>FY 2012 Plans:</b> Funding will provide software and system engineering analysis and development. Reuse and integration of government and commercial computer programs to support extended range munitions and other naval weapon applications.</p>	0.632 0	0.665 0	0.296 0
<p><b>Title:</b> Technical Design Agent</p> <p align="right"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Funding provided Technical Design Agent (TDA) support, joint requirements investigation and Concept of Operations (CONOPs) scenario development.</p> <p><b>FY 2011 Plans:</b></p>	0.100 0	0.100 0	0.050 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603795N: <i>Land Attack Tech</i>	<b>PROJECT</b> 2325: <i>Naval Fires Control System</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Funding will provide Technical Design Agent support, joint requirements investigation and Concept of Operations (CONOPs) scenario development. <b>FY 2012 Plans:</b> Funding will provide Technical Design Agent support, joint requirements investigation and Concept of Operations (CONOPs) scenario development.				
<b>Title:</b> C4I Systems  <b>FY 2010 Accomplishments:</b> Funding provided continued support for C4I and combat system interface investigation and analysis in relation to developing C4I systems and technologies. <b>FY 2011 Plans:</b> Funding will provide continued support for C4I and combat system interface investigation and analysis in relation to developing C4I systems and technologies. <b>FY 2012 Plans:</b> Funding will provide continued support for C4I and combat system interface investigation and analysis in relation to developing C4I systems and technologies.		<b>Articles:</b> 0.200 0	0.140 0	0.075 0
<b>Title:</b> Logistic Support  <b>FY 2010 Accomplishments:</b> Funding supports developmental test and evaluation, and logistics support elements development.		<b>Articles:</b> 0.100 0	-	-
<b>Title:</b> Operational Development  <b>FY 2010 Accomplishments:</b> Funding supports operational test and evaluation, and logistics support element developments.		<b>Articles:</b> 0.134 0	-	-
<b>Accomplishments/Planned Programs Subtotals</b>		1.166	0.905	0.421

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603795N: <i>Land Attack Tech</i>	<b>PROJECT</b> 2325: <i>Naval Fires Control System</i>

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>			<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• 5112: <i>OPN</i>	1.387	1.086	2.049	0.000	2.049	3.516	1.301	1.327	1.048	0.000	11.714

**D. Acquisition Strategy**

A sole source contract was awarded to GDIS for Phase 1 software development. NSWC/DD took over this function from GDIS and will remain the software developer. The original hardware manufacturer and developer is NUWC, Keyport.

**E. Performance Metrics**

Quarterly Program Reviews and semi-annual Product Certification Panel Reviews.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603795N: <i>Land Attack Tech</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	8.567	-	-	-	-	-	-	-	-	0.000	8.567
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project 9D60A  
76mm Swarmbuster Capability - FY10 \$1,593K  
Continue efforts to integrate the MK 75 with Close-In Weapons System (CIWS) for ASuW capability against swarming boats.

Project 10C130  
Hybrid Propellant for Medium and Large Caliber Ammunition - FY10 \$3,983K  
Propellant and primer technologies developed under this add will be integrated into future acquisitions of Navy propelling charges.

Project 10C204  
MK38 Mod 2 at Sea Testing - FY10 \$2,991K  
Funding supports demonstration of the feasibility/suitability of integrating a 10KW laser onto the MK38 Mod 2 Machine Gun System.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Hybrid Propellant for Medium and Large Caliber Ammunition	3.983	-
<b>FY 2010 Accomplishments:</b> USN qualification of Hybrid Propellant that meets Navy goals and capability requirements.		
<b>Congressional Add:</b> MK 38 MOD 2 AT SEA TESTING	2.991	-
<b>FY 2010 Accomplishments:</b> Demonstrate laser beam director integration onto a MK 38 Mod 2 Machine Gun System (MGS) that is capable of pointing, stabilizing, and firing a 10KW laser. This effort will produce a feasibility report exploring integration platforms.		
<b>Congressional Add:</b> 76mm Swarmbuster Capability	1.593	-
<b>FY 2010 Accomplishments:</b> Continue supporting development and testing of system to support integration of MK 75 with CIWS.		
<b>Congressional Adds Subtotals</b>	8.567	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603795N: <i>Land Attack Tech</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>

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

N/A

**D. Acquisition Strategy**

Congressional Add.

**E. Performance Metrics**

Quarterly Program Reviews.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	50.946	43.272	40.992	-	40.992	50.348	49.627	50.678	51.570	Continuing	Continuing
2319: <i>Non-Lethal Weapons</i>	47.839	43.272	40.992	-	40.992	50.348	49.627	50.678	51.570	Continuing	Continuing
9999: <i>Congressional Adds</i>	3.107	-	-	-	-	-	-	-	-	0.000	3.107

**A. Mission Description and Budget Item Justification**

The DoD's Joint Non-Lethal Weapons Program (JNLWP) was established by the Secretary of Defense, who assigned centralized responsibility for DoD joint research and development of non-lethal weapons and technology to the Commandant of the Marine Corps as the Executive Agent. The Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L) provides direct oversight of the JNLWP.

The efforts described in this Program Element (PE) reflect Joint Service research and development (R&D) investment decisions provided by the Joint NLW Integrated Product Team, a multi-service flag level corporate board that executes the JNLWP for the Commandant of the Marine Corps. Research conducted is based on the needs and capabilities of the Services, the Special Operations Command, and the Coast Guard, as identified in the DoD's Non-Lethal Weapons Joint Capabilities Document. This coordinated joint R&D development approach addresses mutual capability gaps and assures the best non-lethal technologies and equipment are provided to the operating forces while eliminating duplicative Service investment.

This program funds Joint Service research, development, test, and evaluation of non-lethal weapon (NLW) systems and technologies that by their design provide a new non-lethal capability to minimize fatal or permanent injuries and undesired damage to property and the environment. Instead, these systems are designed to stun, incapacitate, or hinder movement of individuals, crowds, or equipment. The availability of NLW allows commanders less than lethal options, particularly in urban warfare and military operations other than war, i.e., peacekeeping, humanitarian assistance and disaster relief, as well as special operations.

The Joint Non-Lethal Weapons Directorate was established by the Commandant of the Marine Corps to manage the day to day research and development activities of the Joint Non-Lethal Weapons Program. The JNLWP funding is distributed amongst the USA, USAF, USN, USMC, SOCOM, and USCG in support of NLW research and development efforts. Each Service is responsible for their procurement and operating support costs.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	49.086	43.272	50.974	-	50.974
Current President's Budget	50.946	43.272	40.992	-	40.992
Total Adjustments	1.860	-	-9.982	-	-9.982
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	2.000	-			
• SBIR/STTR Transfer	-0.936	-			
• Program Adjustments	-	-	-9.332	-	-9.332
• Rate/Misc Adjustments	-	-	-0.650	-	-0.650
• Congressional General Reductions Adjustments	-0.004	-	-	-	-
• Congressional Add Adjustments	0.800	-	-	-	-

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

**Project: 9999: Congressional Adds**

- Congressional Add: *Non-Lethal Defense Technologies*
- Congressional Add: *Eye Safe Laser Warning Systems*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	2.310	-
	0.797	-
Congressional Add Subtotals for Project: 9999	3.107	-
Congressional Add Totals for all Projects	3.107	-



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2319: <i>Non-Lethal Weapons</i>	47.839	43.272	40.992	-	40.992	50.348	49.627	50.678	51.570	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project develops non-lethal weapon (NLW) systems that by their design provide a new non-lethal capability to minimize fatal or permanent injuries and undesired damage to property and the environment. Instead, these systems are designed to stun, incapacitate, or hinder movement of individuals, crowds, or equipment. The availability of NLW allows commanders less than lethal options, particularly in urban warfare and military operations other than war, i.e., peacekeeping, humanitarian assistance and disaster relief, as well as special operations.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> *Modeling and Simulation (M&amp;S) of NLWs.</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued modeling and simulation (M&amp;S) of NLWs in warfighter training/war gaming models and performance effects data collection/population to demonstrate/analyze NL effects and optimize training.</p> <p><b>FY 2011 Plans:</b> Continue modeling and simulation (M&amp;S) of NLWs in warfighter training/war gaming models and performance effects data collection/population to demonstrate/analyze NL effects and optimize training.</p> <p><b>FY 2012 Plans:</b> Continue modeling and simulation (M&amp;S) of NLWs in warfighter training/war gaming models and performance effects data collection/population to demonstrate/analyze NL effects and optimize training.</p>	<p>1.101</p> <p>0</p>	<p>1.167</p> <p>0</p>	<p>1.202</p> <p>0</p>
<p><b>Title:</b> *Evaluations of NLWs.</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> Continued evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various non-lethal (NL) technologies and munitions.</p> <p><b>FY 2011 Plans:</b> Continue evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various non-lethal (NL) technologies and munitions.</p> <p><b>FY 2012 Plans:</b></p>	<p>1.402</p> <p>0</p>	<p>1.486</p> <p>0</p>	<p>1.531</p> <p>0</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	
Continue evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various non-lethal (NL) technologies and munitions.					
<b>Title:</b> *JNLW Program's execution oversight and technologies database support.					
		<b>Articles:</b>	3.563 0	3.777 0	3.890 0
<b>FY 2010 Accomplishments:</b> Continued execution oversight, administration and support of the Joint NLW Program and technologies database.					
<b>FY 2011 Plans:</b> Continue execution oversight, administration and support of the Joint NLW Program and technologies database.					
<b>FY 2012 Plans:</b> Continue execution oversight, administration and support of the Joint NLW Program and technologies database.					
<b>Title:</b> *Airburst Non-Lethal Munition					
		<b>Articles:</b>	2.600 0	- -	- -
<b>FY 2010 Accomplishments:</b> Continued development of the XM112 40mm extended range NL munition for the next generation combat weapon which exploits air-burst munitions with NL payloads at longer ranges with existing systems. Conducted cartridge development and component integration test and evaluation.					
<b>Title:</b> *Program Support of the Joint NLW Program.					
		<b>Articles:</b>	2.125 0	2.253 0	2.321 0
<b>FY 2010 Accomplishments:</b> Continued program support efforts for each Service's coordination and participation in the Joint NLW Program. This includes SOCOM and USCG.					
<b>FY 2011 Plans:</b> Continue program support efforts for each Service's coordination and participation in the Joint NLW Program. This includes SOCOM and USCG.					
<b>FY 2012 Plans:</b> Continue program support efforts for each Service's coordination and participation in the Joint NLW Program. This includes SOCOM and USCG.					
<b>Title:</b> *Active Denial Technology (ADT) Transition.					
		<b>Articles:</b>	1.000 0	1.950 0	1.000 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Continued maturation of active denial technologies in preparation for transition to joint acquisition programs of record. Conducted a comprehensive beam characterization and analysis of all active denial technology demonstrators. Supported efforts for the deployment of ADS System 2 into theater in support of overseas contingency operations.</p> <p><b><i>FY 2011 Plans:</i></b> Continue maturation of active denial technologies in preparation for transition to joint acquisition programs of record. Funding increase between FY10 and FY11 captures teh most promising emergent ADT technologies from Advanced Technology Development to increased levels of research and development.</p> <p><b><i>FY 2012 Plans:</i></b> Continue maturation of active denial technologies in preparation for transition to joint acquisition programs of record. Capture most promising emergent ADT technologies from Advanced Technology Development to higher levels of research and development.</p>				
<p><b><i>Title:</i></b> *Distributed Sound and Light Array (DSLA).</p> <p align="right"><b><i>Articles:</i></b></p>		0.270 0	-	-
<p><b><i>FY 2010 Accomplishments:</i></b> Continued multi-sensory counter-personnel research on non-lethal acoustical/optical weapons for use as a hail and warning device. Efforts focussed on the fabrication of a hardened, ruggedized system with improved laser engineering constraints.</p> <p><b><i>Title:</i></b> *JNLW Emerging Technologies</p> <p align="right"><b><i>Articles:</i></b></p>		16.780 0	15.216 0	15.650 0
<p><b><i>FY 2010 Accomplishments:</i></b> Continued the advanced development of emerging technologies into the acquisition process to satisfy critical joint mission tasks. Increases to this line item represent maturing technology transitions from advanced technology development efforts.</p> <p><b><i>FY 2011 Plans:</i></b> Continue the advanced development of emerging technologies into the acquisition process to satisfy critical joint mission tasks. This line item funds maturing technology transitions from advanced technology development efforts.</p> <p><b><i>FY 2012 Plans:</i></b> Continue the advanced development of emerging technologies into the acquisition process to satisfy critical joint mission tasks. Increases to this line item represent maturing technology transitions from advanced technology development efforts.</p>				
<p><b><i>Title:</i></b> *System development and Design of technology development.</p>		7.922	6.672	3.764

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Articles:</b>		0	0	0
<b>FY 2010 Accomplishments:</b> Continued system development and design of technology development downselected items to proceed into the acquisition cycle to provide NL technology solutions to critical joint mission tasks.				
<b>FY 2011 Plans:</b> Continue system development and design of technology development downselected items to proceed into the acquisition cycle to provide NL technology solutions to critical joint mission tasks.				
<b>FY 2012 Plans:</b> Continue system development and design of technology development downselected items to proceed into the acquisition cycle to provide NL technology solutions to critical joint mission tasks.				
<b>Title:</b> *Develop/expand the NATO Measures of Effectives (MOE) efforts.		1.854	1.873	1.981
<b>Articles:</b>		0	0	0
<b>FY 2010 Accomplishments:</b> Continued to develop/expand the NATO Measures of Effectives (MOE) efforts, chaired by the U.S. to provide input for Defense Capabilities Initiative (DCI) and NATO assessment of NLW in the Defense planning process. Expanded interaction with component commander (COCOM) staffs to identify emerging NLW capabilities and their utility in theater operations and Homeland Security missions.				
<b>FY 2011 Plans:</b> Continue to develop/expand the NATO Measures of Effectives (MOE) efforts, chaired by the U.S. to provide input for Defense Capabilities Initiative (DCI) and NATO assessment of NLW in the Defense planning process. Expanded interaction with component commander (COCOM) staffs to identify emerging NLW capabilities and their utility in theater operations and Homeland Security missions.				
<b>FY 2012 Plans:</b> Continue to develop/expand the NATO Measures of Effectives (MOE) efforts, chaired by the U.S. to provide input for Defense Capabilities Initiative (DCI) and NATO assessment of NLW in the Defense planning process. Expanded interaction with component commander (COCOM) staffs to identify emerging NLW capabilities and their utility in theater operations and Homeland Security missions.				
<b>Title:</b> *Mission Payload Module Non Lethal Weapon System (formerly TUGV)		2.060	3.046	4.664
<b>Articles:</b>		0	0	0
<b>FY 2010 Accomplishments:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continued development of a tube launched NL munition for integration on HMMWVs, tactical vehicles, boats and ships, with a range of 30-150 meters (T) and 10 - 500 meters (O). Mission Payload Module (MPM) will provide an improved Non-Lethal (NL) capability applicable to controlling crowds, denying/defending areas, controlling access and engaging threats while providing increased standoff for protection of friendly forces. The weapons platform will provide greater range, area coverage, duration of effects, selectability, and scalability for these non-lethal effects than current NLW systems.  <b>FY 2011 Plans:</b> Continue development of a tube launched NL munition for integration on HMMWVs, tactical vehicles, boats and ships, with a range of 30-150 meters (T) and 10 - 500 meters (O). Efforts will include the final design and payload development, MS B documentation development, coordination and approval.  <b>FY 2012 Plans:</b> Continue development of a tube launched NL munition for integration on HMMWVs, tactical vehicles, boats and ships, with a range of 30-150 meters (T) and 10 - 500 meters (O). Efforts will include completion of EMD contracting, preliminary design review, preliminary review boards and panels.				
<b>Title:</b> *Joint Integration Program (JIP).  <b>FY 2010 Accomplishments:</b> Continue to select and test newly developed commercial products that may meet the Joint Services' requirements for specific NL capability set common items. Conducted an evaluation of COTS non-lethal fogger grenades in support of Service counter-personnel requirements.  <b>FY 2011 Plans:</b> Continue to select and test newly developed commercial products that may meet the Joint Services' requirements for specific NL capability set common items.  <b>FY 2012 Plans:</b> Continue to select and test newly developed commercial products that may meet the Joint Services' requirements for specific NL capability set common items.		0.600 Articles: 0	0.600 0	0.600 0
<b>Title:</b> *Studies and Analysis  <b>FY 2010 Accomplishments:</b>		6.562 Articles: 0	5.232 0	4.389 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Continued medical and NL casualty data research and collection; human effects assessments; acceptability analysis; and technical studies/analysis of emerging technologies for possible NL application. <b><i>FY 2011 Plans:</i></b> Continue medical and NL casualty data research and collection; human effects assessments; acceptability analysis; and technical studies/analysis of emerging technologies for possible NL application. <b><i>FY 2012 Plans:</i></b> Continue medical and NL casualty data research and collection; human effects assessments; acceptability analysis; and technical studies/analysis of emerging technologies for possible NL application.			
<b>Accomplishments/Planned Programs Subtotals</b>	47.839	43.272	40.992

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

N/A

**D. Acquisition Strategy**

The JNLW Program strategy is to continue to pursue the fielding of NLW systems through modifying Commercial-Off-The-Shelf (COTS) products for near term capabilities and the development of new technology NLW systems in various stages of acquisition. These are balanced with efforts in modeling and simulation, experimentation, and state-of-the-art technology investment. The acquisition strategy for each weapon system is largely Lead Service dependent. The JNLWP provides RDT&E funding while the Services are responsible for procurement and operations and maintenance funding. For complex development programs, such as directed energy research, JNLWP RDT&E funds will augment each Service's RDT&E funding in support of joint applications.

**E. Performance Metrics**

N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
NLW Product Development	MIPR	ARDEC:Picatinny, NJ	35.688	5.500		5.311		-		5.311	0.000	46.499	
NLW Product Development	MIPR	SOCOM:McDill AFB, FL	12.221	1.956		2.000		-		2.000	0.000	16.177	
NLW Product Development	WR	NSWC:Various	16.313	2.842		2.941		-		2.941	0.000	22.096	
NLW Product Development	MIPR	USAF:Eglin AFB, FL	15.464	1.500		-		-		-	0.000	16.964	
NLW Product Development	MIPR	USAF:Kirtland AFB, NM	21.061	1.000		1.035		-		1.035	0.000	23.096	
NLW Product Development	MIPR	USAF:Brooks AFB, TX	38.584	5.539		5.500		-		5.500	0.000	49.623	
NLW Product Development	MIPR	JWCF:Fort Monroe, VA	12.157	-		-		-		-	0.000	12.157	
NLW Product Development	Various	MCSC:Quantico, VA	16.137	0.350		4.664		-		4.664	0.000	21.151	
NLW Product Development	MIPR	NSMA:Arlington, VA	23.277	1.000		-		-		-	0.000	24.277	
NLW Product Development	C/CPFF	MCLB:Albany, GA	8.316	-		-		-		-	0.000	8.316	
NLW Product Development	MIPR	M&S:Various	15.743	1.167		1.208		-		1.208	0.000	18.118	
NLW Product Development	Various	JIP:Various	11.912	0.600		0.600		-		0.600	0.000	13.112	
NLW Product Development	Various	Uniformed Services:Various	84.758	19.020		15.633		-		15.633	0.000	119.411	
<b>Subtotal</b>			311.631	40.474		38.892		-		38.892	0.000	390.997	

**Remarks**  
 Joint Program funds are distributed amongst the USA, USAF, USN, USMC, SOCOM, and USCG in support of NLW research and development efforts. Each Cost Category Item does not correlate to an individual project/effort. They fund multiple non-lethal projects/efforts that are incrementally funded throughout the fiscal year as each service identifies the project/effort requiring funding. Therefore the Award Dates for each cost category item is various.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
NLW Support Cost	WR	MCSC:Quantico, VA	10.534	0.337		-		-		-	0.000	10.871	
NLW Support Cost	WR	NSWC:Dahlgren, VA	11.687	1.311		1.400		-		1.400	0.000	14.398	
NLW Support Cost	Various	Various:Various	29.776	0.650		0.700		-		0.700	0.000	31.126	
<b>Subtotal</b>			51.997	2.298		2.100		-		2.100	0.000	56.395	





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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Proj 2319</b>																												
AIRBURST NON-LETHAL MUNITION (ANLM) - MS C																												
MISSION PAYLOAD MODULE (MPM) - MS B																												
MISSION PAYLOAD MODULE (MPM) - MS C																												

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 2319: <i>Non-Lethal Weapons</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 2319</i></b>				
AIRBURST NON-LETHAL MUNITION (ANLM) - MS C	1	2010	2	2012
MISSION PAYLOAD MODULE (MPM) - MS B	2	2011	1	2012
MISSION PAYLOAD MODULE (MPM) - MS C	1	2012	1	2015

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	3.107	-	-	-	-	-	-	-	-	0.000	3.107
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project develops non-lethal weapon (NLW) systems that by their design, provide a new non-lethal capability to minimize fatal or permanent injuries and undesired damage to property and the environment. As identified in the Non-Lethal Effects Joint Capabilities Document, the ability to non-lethally stop vehicles is the top capability gap as identified by the Services.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Non-Lethal Defense Technologies	2.310	-
<b>FY 2010 Accomplishments:</b> This Congressional plus up is intended to assist in the cross comparison of non-lethal defense technologies, human effects and long term programmatic of multiple initiatives and the independent technical assessment of non-lethal weapons.		
<b>Congressional Add:</b> Eye Safe Laser Warning Systems	0.797	-
<b>FY 2010 Accomplishments:</b> This Congressional plus up is intended to assist in the cross comparison of eye safe laser warning technologies, human effects and long term programmatic non-lethal weapons.		
<b>Congressional Adds Subtotals</b>	3.107	-

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

N/A

**D. Acquisition Strategy**

The JNLW Program strategy is to continue to pursue the fielding of NLW systems through modifying Commercial-Off-The-Shelf (COTS) products for near term capabilities and the development of new technology NLW systems in various stages of acquisition. These are balanced with efforts in modeling and simulation, experimentation, and state-of-the-art technology investment. The acquisition strategy for each weapon system is largely Lead Service dependent. The JNLWP provides RDT&E funding while the Services are responsible for procurement and operations and maintenance funding. For complex development programs, such as directed energy research, JNLWP RDT&E funds will augment Service RDT&E funding in support of joint applications.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603851M: <i>Joint Non-Lethal Weapons Testing</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>

**E. Performance Metrics**

N/A

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	143.546	159.151	121.455	-	121.455	148.177	157.003	132.270	162.515	Continuing	Continuing
2329: <i>JPALS</i>	134.972	121.165	72.537	-	72.537	78.832	37.517	-	-	0.000	445.023
3228: <i>JPALS 1B</i>	8.574	37.986	48.918	-	48.918	69.345	119.486	132.270	162.515	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element provides for the development, integration, and testing of the Joint Precision Approach and Landing System (JPALS), which will be applicable to Department of Defense (DoD) Ground systems, DoD aircraft, and Navy and Coast Guard air capable surface ships. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night precision approach and landing capability. Operating environments include fixed or permanent ground facilities, tactical facilities, and shipboard. JPALS will be interoperable with civil landing systems. The JPALS program was established in response to the Joint Mission Need Statement (MNS) for Precision Approach and Landing Capability (PALC), which was approved by the Chief of Naval Operations on 28 July 1994 and the Chief of Staff of the Air Force on 8 August 1994. The PALC MNS was validated by the Joint Requirements Oversight Council (JROC) on 29 August 1995. Army Joint Service participation was included in the 28 May 1996 Principal Deputy Under Secretary of Defense (Acquisition and Technology) Milestone 0 Acquisition Decision Memorandum, which also designated the Air Force as the Lead Service. In March 2004, the JPALS Overarching Integrated Program Team determined that the MNS should be converted to an Initial Capabilities Document (ICD). The JPALS ICD was approved by the JROC on 19 September 2005. On 21 July 2007 JROCM approved the JPALS Capability Development Document and designated the Navy as the Lead Service. The Analysis of Alternatives was finalized in 3Q FY2007. Milestone B was met 17 July 2008. At Milestone B, the Milestone Decision Authority separated Increment 1 into Inc 1A and Inc 1B.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	149.680	159.151	123.959	-	123.959
Current President's Budget	143.546	159.151	121.455	-	121.455
Total Adjustments	-6.134	-	-2.504	-	-2.504
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-2.000	-	-	-	-
• SBIR/STTR Transfer	-3.153	-	-	-	-
• Program Adjustments	-	-	-1.203	-	-1.203
• Section 219 Reprogramming	-0.978	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.301	-	-1.301
• Congressional General Reductions Adjustments	-0.003	-	-	-	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	

**Change Summary Explanation**

Technical: Not applicable.

Schedule:

Project 2329 - Updated to reflect latest Engineering Development Model delivery schedule, refined IT-1-3/OA schedule and moved the Full Rate Production Award to 3QFY15 in accordance with the latest program schedule. Critical Design Review (CDR) conducted 18-20 Dec 2010.

Project 3228 - Inc-1B schedule update reflects a 1-2 quarter slide in several events to incorporate schedule inputs from original equipment manufacturers, allow for multiple subcontractor component competitions and risk mitigation testing, and account for technical complexity.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2329: <i>JPALS</i>	134.972	121.165	72.537	-	72.537	78.832	37.517	-	-	0.000	445.023
Quantity of RDT&E Articles	1	1	6	0	6	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Joint Precision Approach and Landing System (JPALS) Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS on all air capable ships, in accordance with the JPALS Capability Development Document (CDD). This effort includes the build and test of Ship Global Positioning System/ Inertial Navigation System based precision approach and landing systems to replace obsolete AN/SPN-46 and AN/SPN-35 Systems. This requirement supports the JPALS Integration on CVN/LHA/LHD-class ships, DDG-1000 class ships (TACAN Replacement), establishes requirements for air integration, and provides critical enabling technology for Joint Strike Fighter and Navy Unmanned Combat Air System (UCAS). Includes risk reduction efforts and trade studies for other air capable ships.

JPALS Engineering Development Model (EDM) test articles will be delivered to support system development and demonstration, as follows:

- FY10 - 1 unit for Contractor Ship Integration Lab (CSIL)
- FY11 - 1 unit for Government Landing Systems Test Facility
- FY12 - 6 EDMs for Shipboard Testing (CVN + LHD/LHA)

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> JPALS Engineering and Manufacturing Development (EMD) Increment 1A - Shipboard</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> JPALS Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS.</p> <p><b>FY 2010 Accomplishments:</b> Completed Preliminary Design Review and CSIL Integration.</p> <p><b>FY 2011 Plans:</b> Complete Critical Design Review and Aircraft Integration Guide (AIG) delivery and begin Integrated Test (IT) 1-3.</p> <p><b>FY 2012 Plans:</b> Continue IT 1-3 and Operational Assessment test events.</p>	<p>130.139</p> <p>1</p>	<p>117.996</p> <p>1</p>	<p>72.537</p> <p>6</p>
<p><b>Title:</b> JPALS EMD Increment 1A - AIG</p> <p style="text-align: right;"><b>Articles:</b></p>	<p>4.833</p> <p>0</p>	<p>3.169</p> <p>0</p>	<p>-</p>

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<p><b>Description:</b> AIG and associated derived requirements are the top level performance requirements for Aircraft Integration. This guide will serve as the integration document for air platforms.</p> <p><b>FY 2010 Accomplishments:</b> Continued development of the AIG and JPALS Aircraft System Specification.</p> <p><b>FY 2011 Plans:</b> Verify Air Integration requirements with Test A/C.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	134.972	121.165	72.537

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/2867: <i>JPALS</i>	0.000	0.000	0.000	0.000	0.000	0.000	15.723	72.865	74.104	81.035	243.727

**D. Acquisition Strategy**

Technology Development phase was conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic Systems Command (Global Air) and multiple industry partners. This effort provided the concept of operations, performance specifications and technology readiness levels necessary to provide the foundation from which to launch the Increment 1 System Development and Demonstration (SDD) phase development. In March 2007, overall joint program leadership transferred from the USAF to the USN. The JPALS 1A phase reached MS B on 17 July 2008 and the SDD phase development contract was awarded on 17 July 2008. Tasking consists of seabased JPALS, related ship and airborne reference systems, end-to-end software algorithms, necessary ship installation hardware, test equipment, system simulation software, and other RDT&E deliverable products to the joint team. The SDD contract was decided after full and open competition. JPALS Increment 1A will be developed by the Navy with an open system architecture in order to facilitate the compatible integration of many different aircraft and avionics architectures. As Lead Service, the Navy will manage the Joint Program to develop all JPALS increments. An updated JPALS Acquisition Strategy separated Increment 1 into two Increments (Inc 1A and Inc 1B). JPALS Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS to meet IOC of all air capable ships, in accordance with the JPALS CDD. Additionally, this requirement supports the JPALS Integration on LHA/LHD-class ships and DDG-1000 class ships and provides critical enabling technology for Joint Strike Fighter and Navy UCAS.

**E. Performance Metrics**

MS B conducted 17 July 2008 and approval granted for program progression to EMD phase. Preliminary Design Review conducted first quarter FY 2010. Critical Design Review conducted first quarter FY2011. EDM 2 Delivery scheduled for fourth quarter FY2011.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	C/CPAF	Raytheon:Fullerton, CA	162.879	63.556	Jan 2011	40.519	Jan 2012	-		40.519	49.100	316.054	316.054
Aircraft Integration-Non Specific	Various	Var:Var	1.744	0.308	Jan 2011	-		-		-	0.000	2.052	2.052
Aircraft Integration-F/A-18E/F, EA-18G	Various	Boeing:St. Louis, MO	3.066	0.123	Jan 2011	-		-		-	0.000	3.189	3.189
Aircraft integration-MH-60R/S	Various	Lockheed Martin:Owego, NY	2.869	0.103	Jan 2011	-		-		-	0.000	2.972	2.972
Aircraft Integration-F-35 JSF	Various	Lockheed Martin:Fort Worth, TX	4.000	0.093	Jan 2011	-		-		-	0.000	4.093	4.093
Aircraft Integration-MH-60R/S	Various	Sikorsky:Stratford, CT	0.600	0.062	Jan 2011	-		-		-	0.000	0.662	0.662
Aircraft Integration-C-2A, E-2D	Various	Northrup Grumman:Bethpage, NY	0.802	0.093	Jan 2011	-		-		-	0.000	0.895	0.895
Aircraft Integration-Systems Engineering	WR	NAWCAD:Pax River, MD	10.306	0.977	Dec 2010	-		-		-	0.000	11.283	
Ship Integration	WR	NAWCAD:Pax River, MD	13.443	7.129	Dec 2010	2.500	Dec 2011	-		2.500	15.000	38.072	
Award Fee	C/CPAF	Var:Var	5.572	3.112	Aug 2011	2.000	Jan 2012	-		2.000	0.000	10.684	10.684
Primary Hardware Development-TD	Various	Var:Var	105.504	-		-		-		-	0.000	105.504	105.504
<b>Subtotal</b>			310.785	75.556		45.019		-		45.019	64.100	495.460	

**Remarks**  
 The Primary Hardware Development contract with Raytheon is a combined CPAF and CPIF contract.  
 Period 1 (15 Sep. 2008-6 Nov. 2009) Award Fee paid on 24 Feb. 2010. Payout was 74.3% of potential fee.

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development Support	Various	Var:Var	21.514	-		-		-		-	0.000	21.514	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering Support-SDD	WR	NAWCAD:Pax River, MD	15.607	15.846	Dec 2010	8.080	Dec 2011	-		8.080	17.729	57.262	
Integrated Logistics Support	WR	NAWCAD:Pax River, MD	7.432	3.659	Dec 2010	3.302	Dec 2011	-		3.302	6.115	20.508	
<b>Subtotal</b>			44.553	19.505		11.382		-		11.382	23.844	99.284	

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NAWCAD:Pax River, MD	18.823	10.331	Dec 2010	5.020	Dec 2011	-		5.020	15.555	49.729	
Operational Test & Evaluation	WR	COMOPTEVFOR:Norfolk, VA	1.320	0.389	Dec 2010	0.390	Dec 2011	-		0.390	1.750	3.849	
<b>Subtotal</b>			20.143	10.720		5.410		-		5.410	17.305	53.578	

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government Engineering Support	WR	NAWCAD:Pax River, MD	32.452	12.362	Dec 2010	7.400	Dec 2011	-		7.400	6.435	58.649	
Program Management Support-Cost	WR	NAWCAD:Pax River, MD	8.007	1.100	Dec 2010	1.102	Dec 2011	-		1.102	3.627	13.836	
PM Support-MSS	C/CPFF	Amelex:California, MD	6.023	1.402	Dec 2010	1.764	Dec 2011	-		1.764	1.637	10.826	20.820
Travel	WR	NAVAIR:Pax River, MD	1.918	0.520	Dec 2010	0.460	Dec 2011	-		0.460	1.052	3.950	
<b>Subtotal</b>			48.400	15.384		10.726		-		10.726	12.751	87.261	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	423.881	121.165	72.537	-	72.537	118.000	735.583	

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603860N: *JT Precision Approach & Ldg Sys*

**PROJECT**

2329: *JPALS*

JPALS INC 1A	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Acquisition Milestones</b>																																
<b>Systems Development</b>																																
Reviews	PDR ■					CDR ■																										
EDM Deliveries																																
<b>Test &amp; Evaluation</b>																																
<b>Production Milestones</b>																																
Deliveries																																

2012PB - 0603860N - 2329

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 2329: <i>JPALS</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JPALS INC 1A</b>				
Acquisition Milestones: MS C	2	2013	2	2013
Acquisition Milestones: IOC	4	2014	4	2014
Acquisition Milestones: Full Rate Production Decision	3	2015	3	2015
Systems Development: Engineering and Manufacturing Development	1	2010	2	2013
Systems Development: Reviews: Preliminary Design Review (PDR)	1	2010	1	2010
Systems Development: Reviews: Critical Design Review (CDR)	1	2011	1	2011
Systems Development: EDM Deliveries: Engineering Development Model (EDM) 1 Delivery	4	2010	4	2010
Systems Development: EDM Deliveries: EDM 2 Delivery	4	2011	4	2011
Systems Development: EDM Deliveries: EDM 3 Delivery	1	2012	1	2012
Systems Development: EDM Deliveries: EDM 5 Delivery	2	2012	2	2012
Systems Development: EDM Deliveries: EDM 7 Delivery	3	2012	3	2012
Systems Development: EDM Deliveries: JSF Ship Integration / Flight Test	1	2012	3	2014
Test & Evaluation: Integrated Test (IT)-1-3/Operational Assessment (OA)	4	2011	4	2012
Test & Evaluation: IT-4	3	2013	4	2013
Test & Evaluation: Initial Operational Test and Evaluation (IOT&E)	1	2014	4	2014
Production Milestones: Aircraft Integration Guide (AIG) Delivery	1	2011	1	2011
Production Milestones: RDT&E Low Rate Initial Production (LRIP) Contract Award	3	2013	3	2013
Production Milestones: Full Rate Production (FRP) Contract Award	3	2015	3	2015
Deliveries: RDT&E LRIP Delivery Qty 3	3	2013	3	2013

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 3228: <i>JPALS 1B</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3228: <i>JPALS 1B</i>	8.574	37.986	48.918	-	48.918	69.345	119.486	132.270	162.515	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Joint Precision Approach and Landing System (JPALS) Increment 1B, beginning in FY10, provides for integration and testing into the avionics of the CVN/LHA/LHD Air Wings, and DDG Air Detachments for all USN Seabased Aircraft, including but not limited to: MH-60R/S, F/A-18E/F, EA-18G, E-2D, and C-2A. Additionally, trade studies and risk reduction activities will be pursued on additional sea based USN/USMC aircraft.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Lead Platform Integration</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This effort includes development, integration, and testing of the MH-60R/S. JPALS Inc 1B provides the Navy with aircraft that are JPALS capable in 2015 and out in the CVN/LHA/LHD Air Wings, and the DDG-1000 Air Detachment.</p> <p><b>FY 2010 Accomplishments:</b> JPALS MH-60R/S System Requirements Review(SRR)-1.</p> <p><b>FY 2011 Plans:</b> Initial design efforts for JPALS on MH-60R/S. Conduct SRR-2 and System Functional Review (SFR).</p> <p><b>FY 2012 Plans:</b> Complete Milestone B JPALS MH-60R/S Preliminary Design Review (PDR).</p>	<p>8.574</p> <p>0</p>	<p>28.137</p> <p>0</p>	<p>30.502</p> <p>0</p>
<p><b>Title:</b> Follow-on Platform Integration</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This effort includes development, integration, and testing of the F/A-18E/F, EA-18G, E-2D, and C-2A, providing the Navy with aircraft that are JPALS capable in 2019 and out. Additionally, trade studies and risk reduction activities will be pursued on additional sea based USN/USMC aircraft.</p> <p><b>FY 2011 Plans:</b> Continue JPALS trade studies, risk reduction, and design activities for applicable CVN aircraft.</p> <p><b>FY 2012 Plans:</b></p>	<p>-</p>	<p>9.849</p> <p>0</p>	<p>18.416</p> <p>0</p>

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 3228: <i>JPALS 1B</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Continue JPALS trade studies, risk reduction, and design activities for applicable CVN aircraft. JPALS F/A-18E/F & EA-18G SRR-2/System Functional Review.			
<b>Accomplishments/Planned Programs Subtotals</b>	8.574	37.986	48.918

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

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN/0573: <i>JPALS</i>	0.000	0.000	0.000	0.000	0.000	0.000	46.500	115.298	197.575	3,256.100	3,615.473

**D. Acquisition Strategy**

JPALS Technology Development phase was conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic Systems Command (Global Air), and multiple industry partners. This effort provided the concept of operations, performance specifications and technology readiness levels necessary to provide the foundation from which to launch the Increment 1 System Development and Demonstration (SDD) phase development. As Lead Service, the Navy will manage the Joint Program to develop all JPALS increments. The JPALS capability will be incrementally acquired based on technology maturity and service needs. An updated JPALS Acquisition Strategy separates Increment 1 into two Increments (Inc 1A and Inc 1B). JPALS Increment 1A provides for development, integration, installation, and test of Sea Based JPALS. JPALS Increment 1B provides for integration and testing into the avionics of the CVN/LHA/LHD Air Wings, and DDG Air Detachments. JPALS Inc 1B will consist of the procurement of airborne systems that are modifications to original equipment manufacture aircraft and integration to existing avionics.

**E. Performance Metrics**

Milestone B scheduled for 3rd quarter 2012.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 3228: <i>JPALS 1B</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Aircraft Integration-Non Specific	Various	Var:Var	2.863	9.031	Dec 2010	0.500	Mar 2012	-		0.500	79.126	91.520	91.520
Aircraft Integration-F/A-18E/F & EA-18G	Various	Boeing:St. Louis, MO	2.808	18.053	Dec 2010	7.950	Dec 2011	-		7.950	157.652	186.463	184.563
Aircraft Integration-MH-60R/S	Various	Lockheed Martin:Owego, NY	1.600	5.799	Dec 2010	17.253	Mar 2012	-		17.253	134.378	159.030	157.300
Aircraft Integration-F/A-18 E/F & EA-18G	WR	NAWCAD:China Lake, CA	-	0.150	Dec 2010	-		-		-	76.100	76.250	
Aircraft Integration-MH-60R/S	Various	Sikorsky:Stratford, CT	0.600	-		8.298	Mar 2012	-		8.298	59.702	68.600	68.600
Aircraft Integration-E-2D	Various	Northrop Grumman:Bethpage, NY	0.600	-		0.600	Jan 2012	-		0.600	250.900	252.100	252.100
Aircraft Integration-C-2A	TBD	Rockwell Collins:Cedar Rapids, IA	-	-		0.300	Jan 2012	-		0.300	139.804	140.104	140.104
<b>Subtotal</b>			8.471	33.033		34.901		-		34.901	897.662	974.067	

**Remarks**

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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Integrated Logistics Support	WR	NAWCAD:Pax River, MD	0.481	0.364	Dec 2010	1.150	Nov 2011	-		1.150	7.423	9.418	
Engineering Support	WR	NAWCAD:Pax River, MD	-	-		3.150	Nov 2011	-		3.150	0.000	3.150	
<b>Subtotal</b>			0.481	0.364		4.300		-		4.300	7.423	12.568	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy DATE: February 2011

Table with 3 columns: APPROPRIATION/BUDGET ACTIVITY (1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)), R-1 ITEM NOMENCLATURE (PE 0603860N: JT Precision Approach & Ldg Sys), and PROJECT (3228: JPALS 1B).

Table titled 'Test and Evaluation (\$ in Millions)'. Columns include: Cost Category Item, Contract Method & Type, Performing Activity & Location, Total Prior Years Cost, FY 2011 (Cost, Award Date), FY 2012 Base (Cost, Award Date), FY 2012 OCO (Cost, Award Date), FY 2012 Total (Cost), Cost To Complete, Total Cost, and Target Value of Contract. Data rows include Developmental Test & Evaluation and a Subtotal.

Table titled 'Management Services (\$ in Millions)'. Columns include: Cost Category Item, Contract Method & Type, Performing Activity & Location, Total Prior Years Cost, FY 2011 (Cost, Award Date), FY 2012 Base (Cost, Award Date), FY 2012 OCO (Cost, Award Date), FY 2012 Total (Cost), Cost To Complete, Total Cost, and Target Value of Contract. Data rows include Government Engineering Support, PM Support, and PM Support-MSS, plus a Subtotal.

Summary row for Project Cost Totals. Columns include: Total Prior Years Cost (10.574), FY 2011 (37.986), FY 2012 Base (48.918), FY 2012 OCO (-), FY 2012 Total (48.918), Cost To Complete (942.092), Total Cost (1,039.570), and Target Value of Contract.

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

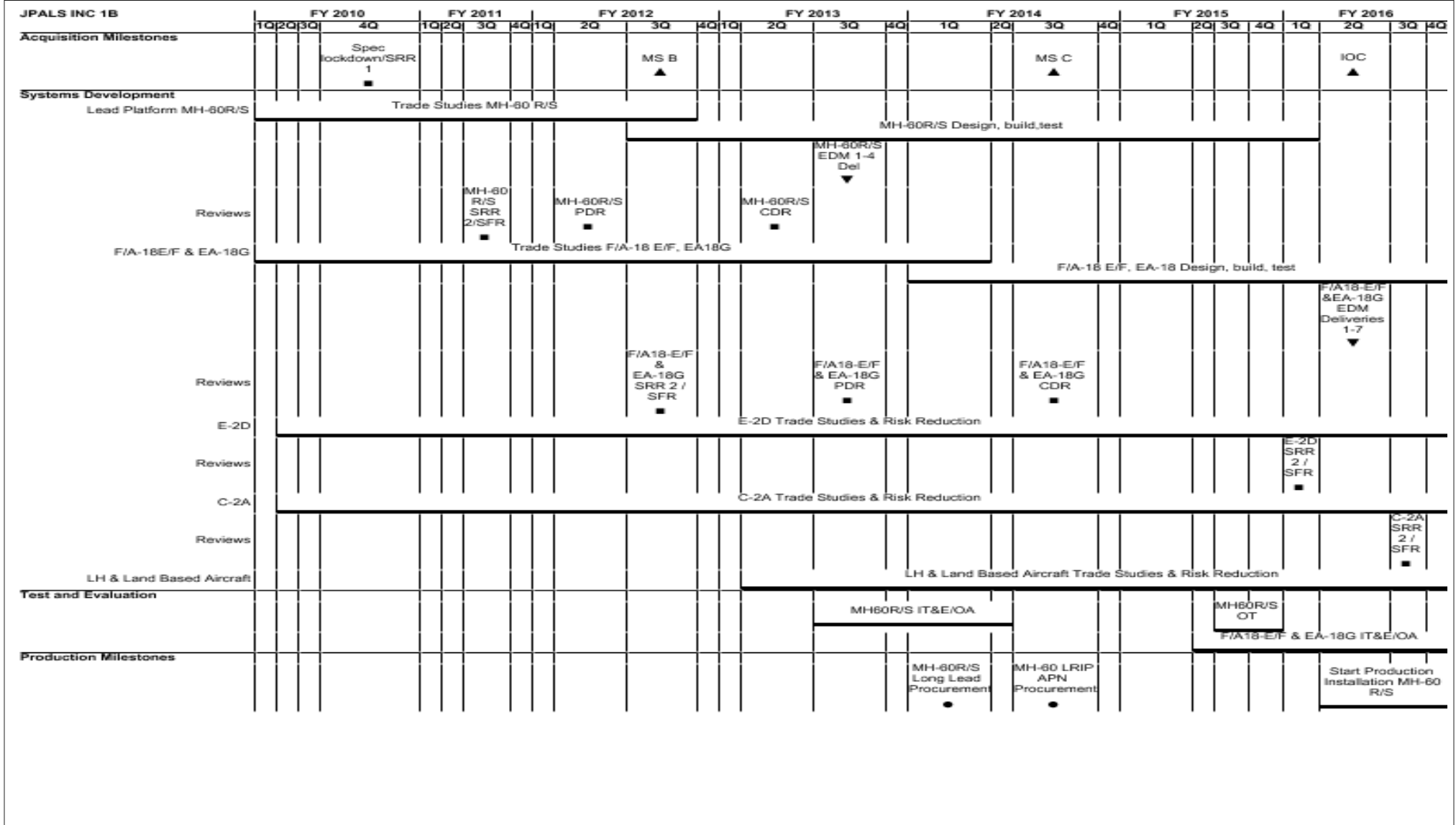
1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603860N: *JT Precision Approach & Ldg Sys*

**PROJECT**

3228: *JPALS 1B*



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy**

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0603860N: *JT Precision Approach & Ldg Sys*

**PROJECT**

3228: *JPALS 1B*

Deliveries	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20	
<div style="display: flex; justify-content: space-between;"> <span>2012PB - 0603860N - 3228</span> <span>MH-60R/S LRIP APN 1-2 Del</span> </div>																					

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 3228: <i>JPALS 1B</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JPALS INC 1B</b>				
Acquisition Milestones: Aircraft Systems Spec Lockdown/ System Requirements Review (SRR) I	4	2010	4	2010
Acquisition Milestones: Milestone B	3	2012	3	2012
Acquisition Milestones: Milestone C	3	2014	3	2014
Acquisition Milestones: Initial Operational Capability (IOC)	2	2016	2	2016
Systems Development: Lead Platform MH-60R/S: Trade Studies MH-60 R/S	1	2010	3	2012
Systems Development: Lead Platform MH-60R/S: MH-60R/S Design, build, test	3	2012	1	2016
Systems Development: Lead Platform MH-60R/S: MH-60R/S Engineering Development Model (EDM) Deliveries 1-4	3	2013	3	2013
Systems Development: Reviews: MH-60R/S SRR 2 / System Functional Review (SFR)	3	2011	3	2011
Systems Development: Reviews: MH-60R/S Preliminary Design Review (PDR)	2	2012	2	2012
Systems Development: Reviews: MH-60R/S Critical Design Review (CDR)	2	2013	2	2013
Systems Development: F/A-18E/F & EA-18G: Trade Studies F/A-18E/F, EA-18G	1	2010	1	2014
Systems Development: F/A-18E/F & EA-18G: F/A-18 E/F, EA-18 Design, build, test	1	2014	4	2016
Systems Development: F/A-18E/F & EA-18G: F/A18-E/F &EA-18G EDM Deliveries 1-7	2	2016	2	2016
Systems Development: Reviews: F/A18-E/F & EA-18G SRR 2 / SFR	3	2012	3	2012
Systems Development: Reviews: F/A18-E/F & EA-18G PDR	3	2013	3	2013
Systems Development: Reviews: F/A18-E/F & EA-18G CDR	3	2014	3	2014
Systems Development: E-2D: E-2D Trade Studies & Risk Reduction	2	2010	4	2016
Systems Development: Reviews: E-2D SRR 2 / SFR	1	2016	1	2016
Systems Development: C-2A: C-2A Trade Studies & Risk Reduction	2	2010	4	2016
Systems Development: Reviews: C-2A SRR 2 / SFR	3	2016	3	2016

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i>	<b>PROJECT</b> 3228: <i>JPALS 1B</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: LH & Land Based Aircraft: LH & Land Based Aircraft Trade Studies & Risk Reduction	2	2013	4	2016
Test and Evaluation: MH-60R/S Initial Test and Evaluation (IT&E)/Operational Assessment (OA)	3	2013	2	2014
Test and Evaluation: MH-60R/S Operational Testing (OT)	3	2015	4	2015
Test and Evaluation: F/A18-E/F & EA-18G IT&E/OA	2	2015	4	2016
Production Milestones: MH-60R/S Long Lead Procurement	1	2014	1	2014
Production Milestones: MH-60R/S Low Rate Initial Production (LRIP) APN Procurement	3	2014	3	2014
Production Milestones: Start Production Installation MH-60 R/S	2	2016	4	2016
Deliveries: LRIP APN Deliveries 1-2	1	2015	1	2015

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603879N: <i>Single Int Air Picture (SIAP) Sys Eng</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	46.087	-	-	-	-	-	-	-	-	0.000	46.087
3031: <i>Single Integrated Air Picture Sys Eng</i>	46.087	-	-	-	-	-	-	-	-	0.000	46.087

**A. Mission Description and Budget Item Justification**

The SIAP capability will provide the Navy warfighter with the ability to better understand the joint battlespace and employ weapons to the full extent of their designed capabilities. The SIAP will support the spectrum of offensive and defensive operations by US, allied, and coalition partners in the airspace within a theater of operations (e.g., attack operations, suppression of enemy air defenses, air and missile defense, intelligence preparation of the battlefield). The SIAP is accomplished through a combination of materiel and nonmateriel improvements. This effort through the application of disciplined System Engineering processes, policies, products and services will enable delivery of an integrated, interoperable, reliable, and maintainable Joint SIAP capability in Navy warfare systems/platforms, in the support of Joint and Navy Mission Capabilities.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	52.497	-	-	-	-
Current President's Budget	46.087	-	-	-	-
Total Adjustments	-6.410	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-4.450	-			
• SBIR/STTR Transfer	-1.829	-			
• Section 219 Reprogramming	-0.130	-			
• Congressional General Reductions	-0.001	-			
Adjustments					

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603879N: <i>Single Int Air Picture (SIAP) Sys Eng</i>	<b>PROJECT</b> 3031: <i>Single Integrated Air Picture Sys Eng</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3031: <i>Single Integrated Air Picture Sys Eng</i>	46.087	-	-	-	-	-	-	-	-	0.000	46.087
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The SIAP capability will provide the Navy warfighter with the ability to better understand the joint battlespace and employ weapons to the full extent of their designed capabilities. The SIAP will support the spectrum of offensive and defensive operations by US, allied, and coalition partners in the airspace within a theater of operations (e.g., attack operations, suppression of enemy air defenses, air and missile defense, intelligence preparation of the battlefield). The SIAP is accomplished through a combination of materiel and nonmateriel improvements. This effort through the application of disciplined System Engineering processes, policies, products and services will enable delivery of an integrated, interoperable, reliable, and maintainable Joint SIAP capability in Navy warfare systems/platforms, in the support of Joint and Navy Mission Capabilities.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> DDG MOD PLATFORM SPECIFIC MODEL			
<b>Articles:</b>	46.087 0	-	-
<b>FY 2010 Accomplishments:</b> FY10: Perform the development and integration tasks required to support the Navy in the development and integration of the two common Track Manager components, System Track Manager (STM) and Track Server (TS) into AMOD ACB 12. The two components are being developed by a third party Systems Integrator / Design Agent (SI/DA). Under this effort, work with the SI/DA to integrate and jointly test the two components being developed in support of the ACB 12 Program. The technical focus of this effort is to conduct the required system engineering and associated development using the Aegis AMOD ACB 12 architecture as a base foundation and to implement Track Management architecture and interface changes in accordance with the Component Architecture SV-4. In addition, perform Common Processor System (CPS) and Common Display System (CDS) hardware configuration and software modifications, combined with Computer Enclosure Module (CEM) relocation, to support ACB 12 system requirements.			
<b>Accomplishments/Planned Programs Subtotals</b>	46.087	-	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603879N: <i>Single Int Air Picture (SIAP) Sys Eng</i>	<b>PROJECT</b> 3031: <i>Single Integrated Air Picture Sys Eng</i>

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

N/A

**D. Acquisition Strategy**

The Navy is implementing the SIAP capability into Navy platforms. Individual Programs of Record implementation will allow identification and resolution of key technical, operational and programmatic issues, and provide lessons learned for future integration into Navy systems which have approved SIAP requirements. Implementation in Aegis, E-2, and SSDS platforms will occur per the Office of the Chief of Naval Operations (OPNAV) N8 SIAP Requirements letter and during scheduled software upgrades, to the extent feasible. This implementation of the capability into Navy platforms will occur upon demonstration of certain critical factors and assumptions.

**E. Performance Metrics**

Milestone Reviews

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603889N: <i>Counterdrug RDT&amp;E Projects</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	14.522	-	-	-	-	-	-	-	-	0.000	14.522
2219: <i>Counterdrug RDTE Support</i>	14.522	-	-	-	-	-	-	-	-	0.000	14.522

**A. Mission Description and Budget Item Justification**

The Counterdrug RDTE Projects Program mission is to develop and deploy technology that disrupts, deters, and denies the flow of drugs, people, information, money, and weapons related to narcoterrorism.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	-	-	-	-
Current President's Budget	14.522	-	-	-	-
Total Adjustments	14.522	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	15.117	-			
• SBIR/STTR Transfer	-0.595	-			

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603889N: <i>Counterdrug RDT&amp;E Projects</i>	<b>PROJECT</b> 2219: <i>Counterdrug RDTE Support</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2219: <i>Counterdrug RDTE Support</i>	14.522	-	-	-	-	-	-	-	-	0.000	14.522
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Counterdrug RDT&E mission is to develop and deploy technology that disrupts, deters, and denies the flow of drugs, people, information, money and weapons related to narcoterrorism.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> New Accomplishment/Planned Program Entry	14.522	-	-
<b>Articles:</b>	0		
<b>FY 2010 Accomplishments:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	14.522	-	-

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

N/A

**D. Acquisition Strategy**

Competitive procurement through RDT&E Indefinite Delivery, Indefinite Quantity (IDIQ) Contract

**E. Performance Metrics**

The CNTPO program goal is to identify and respond to R&D requirements that support ongoing counter narcoterrorism missions being conducted by the Department of Defense, other Federal agencies, partner nations and State and local authorities. CNTPO will conduct studies, analyses and experimentation in both laboratory and non-laboratory environments to support the DoD strategy for disrupting, deterring, and denying the flow of drugs, people, information, money and weapons related to illegal drug trafficking and narcoterrorism.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	18.989	-	-	-	-	-	-	-	-	0.000	18.989
9823: <i>Lasers for Navy applicat</i>	4.748	-	-	-	-	-	-	-	-	0.000	4.748
9999: <i>Congressional Adds</i>	14.241	-	-	-	-	-	-	-	-	0.000	14.241

**A. Mission Description and Budget Item Justification**

In accordance with NAVSEA Notice 5400, Ser 09B/240, Subj: ESTABLISHMENT OF THE NAVY DIRECTED ENERGY (DE) WEAPONS PROGRAM OFFICE (PMS 405), dated 4 Jan 02 and NAVSEA 5400.101, Ser SEA 06/058, Subj: DIRECTED ENERGY AND ELECTRIC WEAPONS PROGRAM OFFICE (PMS 405) CHARTER, dated 21 Jul 04 - COMNAVSEASYS COM (PMS 405) was assigned as the single Point of Contact for matters related to Directed Energy and Electric Weapon Systems development and acquisition initiation for the Navy and for those matters being coordinated with other Federal agencies and military services. The Naval Directed Energy and Electric Weapon Systems Program Office's (PMS 405) mission is to transition technology from the laboratory to prototype/advanced development/test for operational development and use. This will change the way the Navy fights in the 21st century by providing the war fighter with additional tools to fight today's and tomorrow's wars. This requires the effective management of Technology Development (BA-4) initiatives into System Development and Demonstration. PMS 405 will manage development of Directed Energy and Electric Weapon Systems onboard future naval surface ships that incorporate: Weapons Grade High Energy Lasers, Free Electron Lasers (Megawatt class), Electromagnetic Rail Gun (EMRG) Weapon Systems, High Power Microwave Weapon/Sensor Systems, and other systems/capabilities.

In FY 10, \$4,748K was provided under Project Unit 9823 to support Pacific Sail Proof of Concept prototype system development and demonstration. Congressional funding was provided for the following projects: \$1,494K was provided under Project Unit (PU) 10C132 to support technology development for Counter-Narcotics efforts as part of Global Law Enforcement; \$1,593K was provided under PU 10C133 to support Joint Technology Insertion and Accelerated System Integration Capability for Electronic Warfare; \$1,195K was provided under PU 10C134 to support Maritime Directed Energy Test Center (MDETC) efforts; \$9,959K was provided under PU 9823A to support Laser Weapon System (LaWS) technology development and test efforts in support of the Advanced Development Model (ADM) effort.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	19.223	-	-	-	-
Current President's Budget	18.989	-	-	-	-
Total Adjustments	-0.234	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.172	-			
• Program Adjustments	-	-	-	-	-
• Section 219 Reprogramming	-0.061	-	-	-	-
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

**Project: 9999: Congressional Adds**

- Congressional Add: *Global Law Enforcement Support for Counter-Narcotics*
- Congressional Add: *Joint Tech Insertion and Accelerated System Integration Capability for Electroni*
- Congressional Add: *Maritime Directed Energy Test and Evaluation Center*
- Congressional Add: *LASERS FOR NAVY APPLICATIONS*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	1.494	-
	1.593	-
	1.195	-
	9.959	-
Congressional Add Subtotals for Project: 9999	14.241	-
Congressional Add Totals for all Projects	14.241	-

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9823: <i>Lasers for Navy applicat</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9823: <i>Lasers for Navy applicat</i>	4.748	-	-	-	-	-	-	-	-	0.000	4.748
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Pacific Sail effort utilizes Lasers for Navy Applications to develop a gyro-stabilized, multi-mission, optical system as a "Proof of Concept" capability for at-sea evaluation in support of tactical ship defense requirements.

Funding was established in FY 2010 under this project unit to support prototype laser system development and system concept demonstration onboard a surface platform. This at-sea test and analysis will demonstrate operational effectiveness in support of Information Operations (IO), short-range ship defense/force protection, tracking and imaging, combat identification, and threat assessment.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Lasers for Navy Applications</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Pacific Sail effort utilizes Lasers for Navy Applications to develop a gyro-stabilized, multi-mission, optical system as a "Proof of Concept" capability for at-sea evaluation in support of tactical ship defense requirements.</p> <p><b>FY 2010 Accomplishments:</b> Funding was established in FY 2010 under this project unit to support laser prototype system development and system concept demonstration onboard a surface platform. This at-sea test and analysis will demonstrate operational effectiveness in support of Information Operations, short-range ship defense/force protection, long-range tracking and imaging, combat identification, and threat assessment.</p>	4.748 0	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	4.748	-	-

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

N/A

**D. Acquisition Strategy**

Government Field Activities: Technology development and demonstration/test of capabilities for designated Directed Energy and Electric Weapon System components, subsystems, system(s). Program Office approved design, development, and demonstration/test efforts.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	9823: <i>Lasers for Navy applicat</i>

Non-Government Activities: Technology development and demonstration/test of capabilities for designated Directed Energy and Electric Weapon System components, systems(s), subsystems. Program Office approved design, development, and demonstration/test efforts.

**E. Performance Metrics**

Quarterly Program Reviews.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9823: <i>Lasers for Navy applicat</i>
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FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

<b>Proj 9823</b>	
Prototype	██████████
Test Conduct	██████████
Test Report	██████████

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9823: <i>Lasers for Navy applicat</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 9823</b>				
Prototype	3	2010	1	2011
Test Conduct	1	2011	2	2011
Test Report	2	2011	4	2011

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	14.241	-	-	-	-	-	-	-	-	0.000	14.241
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

10C132 - Global Law Enforcement Support for Counter-Narcotics - Funding was provided to support the development and deployment of wireless intercept technology to aid in counter-narcotics operations in foreign countries.

10C133 - Joint Technology Insertion and Accelerated System Integration Capability for Electronic Warfare (EW) - Funding was provided for the development of an Electronic Warfare (EW) Capabilities Analysis Tool that can conduct 'capability versus threat' analyses using multiple, networked, Joint/Coalition EW Threat Databases.

10C134 - Maritime Directed Energy Test Center (MDETC) - Funding was provided for maritime-based Directed Energy (DE) testing and facility utilization at Pacific Missile Range Facility in Hawaii. Laser propagation test conduct and analysis, facility requirements/utilization planning and agreements, and addressing of environmental considerations associated with DE testing are integral to the overall operational DE test strategy for the Surface Navy.

9823A - Lasers for Navy Applications (Laser Weapon System) - Funding was provided to support the acceleration of technology development and testing of the Laser Weapon System (LaWS), to provide for Navy-funded development, production, and fielding in the near future. FY 10 funding supports the acceleration of LaWS engineering and development of the Advanced Development Model (ADM) to include: operational and employment concept requirements/definition; ADM test planning, coordination, and conduct; mechanical design of system components; LaWS-specific software development; CIWS integration; ship integration including space, weight, power, and cooling.

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

	FY 2010	FY 2011
<b>Congressional Add:</b> Global Law Enforcement Support for Counter-Narcotics	1.494	-
<b>FY 2010 Accomplishments:</b> 10C132 - Global Law Enforcement Support for Counter-Narcotics: Funding provided to support the development and deployment of wireless intercept technology to aid in counter-narcotics operations in foreign countries.		
<b>Congressional Add:</b> Joint Tech Insertion and Accelerated System Integration Capability for Electroni	1.593	-
<b>FY 2010 Accomplishments:</b> 10C133 - Joint Technology Insertion and Accelerated System Integration Capability for Electronic Warfare: Funding provided for the development of an Electronic Warfare (EW) Capabilities Analysis Tool that can conduct 'capability versus threat' analyses using multiple, networked, Joint/Coalition EW Threat Databases.		
<b>Congressional Add:</b> Maritime Directed Energy Test and Evaluation Center	1.195	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b><i>FY 2010 Accomplishments:</i></b> 10C134 - Maritime Directed Energy Test Center (MDETC): Funding provided for maritime-based Directed Energy (DE) testing and facility utilization at Pacific Missile Range Facility in Hawaii. Laser propagation test conduct and analysis, facility requirements/utilization planning and agreements, and addressing of environmental considerations associated with DE testing are integral to the overall operational DE test strategy for the Surface Navy.		
<b><i>Congressional Add:</i></b> LASERS FOR NAVY APPLICATIONS	9.959	-
<b><i>FY 2010 Accomplishments:</i></b> 9823A - Lasers for Navy Applications (Laser Weapon System): Funding provided to support the acceleration of technology development and testing of the Laser Weapon System (LaWS), to provide for Navy-funded development, production, and fielding in the near future. FY 10 funding supports the acceleration of LaWS engineering and development of the Advanced Development Model (ADM) to include: operational and employment concept requirements/definition; ADM test planning, coordination, and conduct; mechanical design of system components; LaWS-specific software development; CIWS integration; ship integration including space, weight, power, and cooling.		
<b>Congressional Adds Subtotals</b>	14.241	-

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

N/A

**D. Acquisition Strategy**

Not Applicable.

**E. Performance Metrics**

Quarter Reviews, Monthly Reports.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

<i>Proj 9999</i>	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
10C132 Preliminary Design Review (PDR)				■																								
10C132 Critical Design Review (CDR)							■																					
10C132 Prototype System Development							■	■																				
10C132 Field Evaluation								■																				
10C133 Preliminary Design Review (PDR)				■																								
10C133 Critical Design Review (CDR)							■																					
10C133 Prototype System Development							■	■																				
10C134 Preliminary Test Plan				■																								
10C134 Final Test Plan							■																					
10C134 Test Conduct								■																				
10C134 Test Analysis								■																				
10C134 Final Report												■																
9823A Preliminary Design Review (PDR) Components/Integration				■			■																					
9823A Component Testing				■			■																					
9823A Critical Design Review (CDR) Components/Integration							■																					
9823A Prototype Components Procured							■	■																				
9823A System Testing												■																

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603925N: <i>Directed Energy and Electric Weapon System</i>	<b>PROJECT</b> 9999: <i>Congressional Adds</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 9999</b>				
10C132 Preliminary Design Review (PDR)	4	2010	4	2010
10C132 Critical Design Review (CDR)	1	2011	1	2011
10C132 Prototype System Development	2	2011	3	2011
10C132 Field Evaluation	3	2011	4	2011
10C133 Preliminary Design Review (PDR)	4	2010	4	2010
10C133 Critical Design Review (CDR)	1	2011	1	2011
10C133 Prototype System Development	2	2011	4	2011
10C134 Preliminary Test Plan	4	2010	4	2010
10C134 Final Test Plan	1	2011	1	2011
10C134 Test Conduct	2	2011	2	2011
10C134 Test Analysis	3	2011	4	2011
10C134 Final Report	4	2011	4	2011
9823A Preliminary Design Review (PDR) Components/Integration	4	2010	1	2011
9823A Component Testing	4	2010	2	2011
9823A Critical Design Review (CDR) Components/Integration	1	2011	2	2011
9823A Prototype Components Procured	2	2011	3	2011
9823A System Testing	4	2011	4	2011

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>								
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>								
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	49.067	51.693	64.107	-	64.107	61.930	38.607	39.496	40.139	Continuing	Continuing
3040: <i>TADIRCM</i>	49.067	-	-	-	-	-	-	-	-	0.000	49.067
3302: <i>JATAS</i>	-	51.693	64.107	-	64.107	57.475	31.463	1.820	-	0.000	206.558
3304: <i>CIRCM</i>	-	-	-	-	-	4.455	7.144	37.676	40.139	Continuing	Continuing

**Note**

Joint and Allied Threat Awareness System (JATAS) work performed in this program element under project unit (PU) 3040 is moved to an individual PU 3302 for efforts beginning in FY 2011.  
New PU 3304 Common Infrared Countermeasures is a new start for the Navy with efforts to begin in FY 2013.

**A. Mission Description and Budget Item Justification**

This element includes development of electronic warfare systems for the United States Navy and United States Marine Corps assault and strike aircraft. This includes the development and testing of advanced Infrared Countermeasures systems for emerging threats and emergency contingencies. Realignment of project units from Tactical Aircraft Directed Infrared Countermeasures (TADIRCM) to Joint and Allied Threat Awareness System (JATAS) begins in FY 2011.

**B. Program Change Summary (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	50.484	51.693	48.614	-	48.614
Current President's Budget	49.067	51.693	64.107	-	64.107
Total Adjustments	-1.417	-	15.493	-	15.493
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.196	-			
• Program Adjustments	-	-	16.085	-	16.085
• Section 219 Reprogramming	-0.216	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.592	-	-0.592
• Congressional General Reductions Adjustments	-0.005	-	-	-	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
PE 0604272N: *Tact Air Dir Infrared CM (TADIRCM)*

**Change Summary Explanation**

Schedule: Planned award date of the JATAS Engineering & Manufacturing Development contract slipped from first quarter FY 2011 to third quarter FY 2011, causing JATAS milestones and deliveries to slip accordingly. Contract award was adjusted from first quarter FY 2011 to third quarter FY 2011 to accommodate the new SECNAV 5000 acquisition gate process and allow sufficient time for the NAVAIR source selection process on competitive prototyping.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3040: <i>TADIRCM</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3040: <i>TADIRCM</i>	49.067	-	-	-	-	-	-	-	-	0.000	49.067
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Tactical Aircraft Directed Infrared Countermeasures (TADIRCM) system provides the war fighter with protection against surface and air-to-air missiles. This project looks at an advanced Infrared Countermeasure (IRCM) capability for USN/USMC rotary wing/tilt rotor assault aircraft against Infrared (IR) Man Portable Air Defense System and Surface-to-Air threats. This project is divided into two components: 1) An advanced missile warning threat detection capability named Joint and Allied Threat Awareness System (JATAS) and 2) An advanced IR countermeasure capability Assault Directed Infrared Countermeasure (DIRCM). OSD has designated the U.S. Army as the lead to develop and field DIRCM capability assault aircraft. The Army program has been designated Common Infrared Countermeasures (CIRCM). JATAS will be the front end of an integrated survivability suite. It will require integration with the APR-39 or follow-on Radar Warning Receiver/Electronic Warfare integration bus, the ALE-47 Countermeasures Dispensing System, and a number of joint and allied platforms. It will also provide advanced capabilities that require extensive testing & evaluation of IRCM techniques.

New PU 3302 JATAS was established to begin in FY 2011. Prior year efforts (FY 2008 - FY 2010) were funded via PU 3040 (TADIRCM).

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> TADIRCM JATAS</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Joint and Allied Threat Awareness System is required to provide assault aircraft with a reliable surface-to-air IR missile/Hostile Fire Indication (HFI) threat detection system.</p> <p><b>FY 2010 Accomplishments:</b> Funded engineering and program management efforts to support the JATAS Technology Development (TD) phase contract award. Incrementally funded the JATAS TD contract and continued development of Hostile Fire Indication (HFI) algorithms.</p>	47.967 0	-	-
<p><b>Title:</b> TADIRCM Assault</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Assault Directed Infrared Countermeasure system will counter current and future IR threats.</p> <p><b>FY 2010 Accomplishments:</b></p>	0.100 0	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3040: <i>TADIRCM</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Funded engineering and program management efforts to support the US Army's CIRCM Milestone B and planned contract award in FY 2012. Conduct an early operational assessment flight test demonstration of a light weight DIRCM capability on an assault aircraft.			
<p><b>Title:</b> JATAS and CIRCM Pre-MS B, Risk Reduction, EMD Effort</p> <p><b>Description:</b> Risk reduction efforts for JATAS and CIRCM programs.</p> <p><b>FY 2010 Accomplishments:</b> Funded the development of applicable modeling and simulation for both programs. Risk reduction efforts in the area of HFI for JATAS and risk reduction/technology development efforts to reduce the size and weight an Assault DIRCM Pointer Tracker System.</p>	<p><b>Articles:</b></p> <p>1.000 0</p>	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	49.067	-	-

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

N/A

**D. Acquisition Strategy**

OPNAV (N88) completed an Analysis of Alternatives (AoA) in March 2007 to address the need for an assault DIRCM capability for assault (rotary wing) platforms. Based on the results of the AoA, an evolutionary acquisition strategy will be used to develop an advanced IRCM capability for USN/USMC rotary wing and tilt rotor assault aircraft. This acquisition approach will consist of two program increments 1) the development, test, and fielding of a Missile Warning capability to detect surface-to-air and air-to-air IR threats and 2) a DIRCM system to counter current and future IR threats. The DIRCM sends directed laser energy to defeat the incoming IR threat when it is detected by the missile warning system. This approach will accelerate fielding of the missile warning capability while allowing DIRCM technology to mature. DIRCM technology maturation is required to support the size and weight constraints of USN/USMC assault platforms. The first increment of an Assault DIRCM capability is the missile warning component. This missile warning component has been designated by N88 as the JATAS. A JATAS TD phase contract was awarded in FY 2009 and an Engineering & Manufacturing Development (EMD) contract award is planned for FY 2011. JATAS Initial Operational Capability is planned for FY 2015. The Army was designated as the lead service for developing a DIRCM capability for assault aircraft. Assault DIRCM designated by the Army as the CIRCM has a planned Milestone B for FY 2012.

**E. Performance Metrics**

Competitive TD contract awarded (2 contractors) in Sept 2009. Incremental funding for FY 2010 to both contractors. Down select to one contractor in FY 2011 for EMD contract award.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: JATAS
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3302: JATAS	-	51.693	64.107	-	64.107	57.475	31.463	1.820	-	0.000	206.558
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Joint and Allied Threat Awareness System (JATAS) is required to provide assault aircraft with a reliable surface-to-air Infrared (IR) missile/Hostile Fire Indication (HFI) threat detection system. This capability must provide accurate and timely warning in all flight regimes, ambient light conditions, clutter backgrounds and weather conditions. It must be capable of providing countermeasure cueing to flares and/or a Directional Infra-red Countermeasures (DIRCM). JATAS will enable assault Aircraft Survivability Equipment (ASE) to detect and provide countermeasure cueing to current and emerging threats. Lead Department of the Navy platform for this capability is the MV-22. Project was previously funded by the Tactical Aircraft Directed Infrared Countermeasure (TADIRCM) project unit.

New PU 3302 JATAS was established to begin in FY 2011. Prior year efforts (FY 2008 - FY 2010) were funded via PU 3040 (TADIRCM).

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> JATAS Technology Demonstration</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Complete Technology Development (TD) phase and program support for JATAS. Program will provide assault aircraft with a reliable surface-to-air IR missile/HFI threat detection system.</p> <p><b>FY 2011 Plans:</b> FY 2011 Base: Complete the execution of the JATAS Technology Development (TD) phase efforts including down select to the Engineering &amp; Manufacturing Development (EMD) vendor. Plan to conduct Preliminary Design Review (PDR), complete TD phase contract, and select vendor for the EMD contract.</p>	-	25.500 0	-
<p><b>Title:</b> JATAS Engineering &amp; Manufacturing Development (EMD)</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Enter EMD phase and provide program support for EMD phase.</p> <p><b>FY 2011 Plans:</b> Plan to execute an EMD contract award to begin development of JATAS and conduct an integrated baseline review. Tasks to be completed include Integrated Baseline Review (IBR).</p> <p><b>FY 2012 Plans:</b></p>	-	18.087 0	50.132 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: <i>JATAS</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Plan to conduct Critical Design Review (CDR), Test Readiness Review, and begin delivery of Engineering Development Model units to support contractor test and development.			
<p><b>Title:</b> JATAS Integration</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> Provide platform integration support and JATAS A-kit development.</p> <p><b>FY 2011 Plans:</b> Continuation of aircraft integration efforts with the JATAS lead platform and execute A-kit development contract.</p> <p><b>FY 2012 Plans:</b> Plan to conduct A-kit PDR and CDR.</p>	-	8.106 0	13.975 0
<b>Accomplishments/Planned Programs Subtotals</b>	-	51.693	64.107

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• APN/057600: JATAS	0.000	0.000	0.000	0.000	0.000	0.000	18.684	31.223	20.763	1,103.622	1,174.292

**D. Acquisition Strategy**

OPNAV (N88) completed an Analysis of Alternatives (AoA) in March 2007 to address the need for a Assault DIRCM capability for assault (rotary wing) platforms. Based on the results of the AoA, an evolutionary acquisition strategy will be used to develop an advanced Infrared Countermeasure capability for USN/USMC rotary wing and tilt rotor assault aircraft. This acquisition approach will consist of two program increments 1) the development, test, and fielding of a Missile Warning capability to detect surface-to-air and air-to-air Infrared (IR) threats and 2) a DIRCM system to counter current and future IR threats. The DIRCM sends directed laser energy to the incoming IR threat once detected by the missile warning system. This approach will accelerate fielding of the missile warning capability while allowing DIRCM technology to mature. DIRCM technology maturation is required to support the size and weight constraints of USN/USMC assault platforms. The first increment of an Assault DIRCM capability is the missile warning component. This missile warning component has been designated by N88 as the JATAS. A JATAS TD phase contract was awarded in FY 2009 and an EMD contract award is planned for FY 2011. JATAS Initial Operational Capability is planned for FY 2015.

**E. Performance Metrics**

Award of JATAS EMD contract planned for third quarter FY 2011.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: <i>JATAS</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev JATAS I	C/CPIF	ATK:Orlando, FL	-	9.584	Nov 2010	-		-		-	0.000	9.584	9.584
Primary Hdw Dev JATAS I	C/CPIF	LM:Woodland Hills, CA	-	9.585	Nov 2010	-		-		-	0.000	9.585	9.585
Primary Hdw Dev JATAS II	C/CPIF	TBD:TBD	-	11.758	May 2011	38.000	Apr 2012	-		38.000	32.225	81.983	81.983
Aircraft Integration JATAS II	C/CPIF	TBD:TBD	-	6.700	May 2011	11.609	Apr 2012	-		11.609	8.059	26.368	26.368
Modeling/Simulation JATAS	WR	Various:Various	-	0.800	Nov 2010	-		-		-	0.000	0.800	
Sys Eng Govt JATAS	WR	NAWCAD:Pax River, MD	-	1.195	Nov 2010	2.644	Dec 2011	-		2.644	11.000	14.839	
Sys Eng Govt JATAS	WR	Various:Various	-	-		0.270	Dec 2011	-		0.270	0.000	0.270	
<b>Subtotal</b>			-	39.622		52.523		-		52.523	51.284	143.429	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Mgmt JATAS	WR	Various:Various	-	0.200	Nov 2010	0.200	Dec 2011	-		0.200	0.900	1.300	
Integrated Logistics JATAS I	WR	Various:Various	-	0.250	Nov 2010	0.256	Dec 2011	-		0.256	0.900	1.406	
Integrated Logistics JATAS II	C/CPFF	TSD:Orlando	-	0.525	Jun 2011	0.355	Jun 2012	-		0.355	1.365	2.245	2.245
Sw Dev JATAS	WR	NAWCWD:Point Mugu	-	0.750	Nov 2010	0.553	Dec 2011	-		0.553	1.000	2.303	
<b>Subtotal</b>			-	1.725		1.364		-		1.364	4.165	7.254	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E JATAS	WR	Various:Various	-	1.110	Apr 2011	2.169	Dec 2011	-		2.169	10.600	13.879	
Operational T&E JATAS	WR	Various:Various	-	0.400	Apr 2011	0.256	Jan 2012	-		0.256	9.647	10.303	
ENG & Eval JATAS	C/CPFF	TBD:Not Specified	-	0.157	Apr 2011	0.367	Dec 2011	-		0.367	2.301	2.825	2.825
ENG & Eval Govt JATAS	WR	Various:Various	-	0.873	Nov 2010	0.893	Jan 2012	-		0.893	2.000	3.766	
Live Fire Support JATAS	WR	Various:Various	-	1.560	Apr 2011	-		-		-	0.300	1.860	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: <i>JATAS</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Assets JATAS	WR	NAWCWD:China Lake	-	0.540	Apr 2011	2.374	Jan 2012	-		2.374	4.000	6.914	
<b>Subtotal</b>			-	4.640		6.059		-		6.059	28.848	39.547	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Eng Supt JATAS	C/CPFF	Various:Various	-	0.726	Jan 2011	0.331	Dec 2011	-		0.331	1.593	2.650	2.650
Govt Eng Supt JATAS	WR	NAWCWD:Point Mugu	-	1.252	Nov 2010	1.842	Dec 2011	-		1.842	0.478	3.572	
Program Mgmt Supt JATAS	C/CPFF	Various:Various	-	1.100	Jan 2011	0.880	Dec 2011	-		0.880	3.240	5.220	5.220
Travel JATAS	WR	NAVAIR:Various	-	0.200	Nov 2010	0.150	Dec 2011	-		0.150	0.300	0.650	
Direct Support Costs JATAS	WR	Various:Various	-	1.150	Nov 2010	-		-		-	0.000	1.150	
Cost Analysis Supt JATAS	WR	NAWCAD:Pax River, MD	-	0.700	Nov 2010	0.830	Dec 2011	-		0.830	0.850	2.380	
NAWCAD Pax Supt JATAS	WR	NAWCAD:Pax River, MD	-	0.578	Nov 2010	0.128	Dec 2011	-		0.128	0.000	0.706	
<b>Subtotal</b>			-	5.706		4.161		-		4.161	6.461	16.328	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		-	51.693	64.107	-	64.107	90.758	206.558

**Remarks**

1. FY11 Primary Hdw Dev JATAS I from 8.534 to 19.169, split between two performers (9.584 for ATK and 9.585 for LM), to reflect extension of contract through mid-year FY11.
2. FY11 Primary Hdw Dev JATAS II from 20.751 to 11.758 reflects schedule slip to 3rd quarter FY11
3. FY11 Integrated Logistics JATAS I from 1.600 to .250 reflects reallocation of resources to ensure sufficient funding to execute TD contract.
4. FY11 ENG & Eval JATAS from 0.000 to .157. Funds broken out from Eng/Eval Govt line to reflect work done by a contractor.
5. FY11 ENG & Eval Govt JATAS from 1.030 to .873 to show funds moved to Eng&Eval line to reflect work done by a contractor.
6. FY11 Program Mgmt Supt JATAS from .750 to 1.100 reflects additional support to assist IPT while in source selection.

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy

DATE: February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: Research, Development, Test & Evaluation, Navy  
 BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 ITEM NOMENCLATURE**

PE 0604272N: Tact Air Dir Infrared CM  
 (TADIRCM)

**PROJECT**

3302: JATAS

JATAS	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Acquisition Milestones</b>																												
Milestones																												
<b>Systems Development</b>																												
Hardware Development																												
Software Development																												
Reviews																												
<b>Test &amp; Evaluation</b>																												
Technical Evaluation																												
Operational Evaluation																												
<b>Production Milestones</b>																												
Contract Awards																												
<b>Deliveries</b>																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: <i>JATAS</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JATAS</b>				
Acquisition Milestones: Milestones: Capabilities Production Document (CPD)	3	2013	3	2013
Acquisition Milestones: Milestones: Milestone C	1	2014	1	2014
Acquisition Milestones: Milestones: Beyond Low-Rate Initial Production Report (BLRIP)	1	2015	1	2015
Acquisition Milestones: Milestones: Joint Allied Threat Awareness System (JATAS) Initial Operational Capability (IOC)	3	2015	3	2015
Systems Development: Technology Readiness Assessment for Milestone C (TRA MC)	3	2013	4	2013
Systems Development: Functional Configuration Audit (FCA)	4	2013	4	2013
Systems Development: Physical Configuration Audit (PCA)	1	2015	1	2015
Systems Development: Reviews: Integrated Baseline Review 2 IBR	1	2012	1	2012
Systems Development: Reviews: Preliminary Design Review (PDR) - A-kit	1	2012	1	2012
Systems Development: Reviews: Critical Design Review (CDR)	2	2012	2	2012
Systems Development: Reviews: Critical Design Review (CDR) - A-kit	3	2012	3	2012
Systems Development: Reviews: Test Readiness Review - Contractor (TRR Cont)	3	2012	3	2012
Systems Development: Reviews: Test Readiness Review - Government (TRR Govt)	1	2013	1	2013
Systems Development: Reviews: Flight Readiness Review (FRR)	1	2013	1	2013
Systems Development: Reviews: Reproduction Readiness Review (PRR)	4	2013	4	2013
Systems Development: Reviews: Operational Test Readiness Review (OTRR)	2	2014	2	2014
Test & Evaluation: Contractor Test and Evaluation (CT+E)	3	2012	1	2013
Test & Evaluation: OT Report 1 (OT)	4	2013	4	2013
Test & Evaluation: OT Report 2 (OT)	4	2014	4	2014
Test & Evaluation: Independent Operational Test and Evaluation (IOT&E)	3	2014	3	2014
Test & Evaluation: Technical Evaluation: Initial Test and Evaluation (IT&E)	1	2013	2	2014

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3302: <i>JATAS</i>
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<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Test & Evaluation: Operational Evaluation: Operational Assessment (OA)	4	2013	4	2013
Production Milestones: Contract Awards: Engineering & Manufacturing Development Award (EMD)	3	2011	3	2011
Production Milestones: Contract Awards: Low-Rate Initial Production (LRIP) I (RDTEN)	1	2014	1	2014
Production Milestones: Contract Awards: Full Rate Production (FRP) I Award	2	2015	2	2015
Production Milestones: Contract Awards: Full Rate Production (FRP) 2 Award	2	2016	2	2016
Deliveries: Engineering Development Model (EDM) Deliveries (2)	3	2012	3	2012
Deliveries: Engineering Development Model (EDM) Deliveries (9)	4	2012	1	2013
Deliveries: Engineering Development Model (EDM) Deliveries (3)	1	2014	1	2014
Deliveries: Low-Rate Initial Production Deliveries	1	2015	1	2016
Deliveries: Full Rate Production (FRP) I Deliveries	3	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604272N: <i>Tact Air Dir Infrared CM (TADIRCM)</i>	<b>PROJECT</b> 3304: <i>CIRCM</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3304: <i>CIRCM</i>	-	-	-	-	-	4.455	7.144	37.676	40.139	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Common Infrared Countermeasures is a new start for the Navy with efforts to begin in FY 2013. No funding in the budget years.

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

N/A

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

N/A

**D. Acquisition Strategy**

Common Infrared Countermeasures is a new start for the Navy with efforts to begin in FY 2013. No funding in the budget years.

**E. Performance Metrics**

Common Infrared Countermeasures is a new start for the Navy with efforts to begin in FY 2013. No funding in the budget years.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0604279N: <i>(U)ASE Self Protection Optimization</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	4.000	-	0.711	-	0.711	0.711	0.426	0.426	0.426	Continuing	Continuing
3308: <i>Technology Development</i>	4.000	-	0.474	-	0.474	0.474	0.189	0.189	0.189	Continuing	Continuing
3309: <i>Assault Survivability Optimization</i>	-	-	0.237	-	0.237	0.237	0.237	0.237	0.237	Continuing	Continuing

**Note**

This program element is a new start in FY 2012.

**A. Mission Description and Budget Item Justification**

This element includes development of Aircraft Survivability equipment and Electronic Warfare/Countermeasures solutions for the United States Navy, United States Marine Corps and Coalition Aircraft to include studies and evaluations of current and future aircraft threats, Modeling and Simulation for improved countermeasure capabilities, and development and testing to address new and emerging threats.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	-	-	-	-
Current President's Budget	4.000	-	0.711	-	0.711
Total Adjustments	4.000	-	0.711	-	0.711
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	4.000	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	0.712	-	0.712
• Rate/Misc Adjustments	-	-	-0.001	-	-0.001

**Change Summary Explanation**

Technical: Not applicable.  
Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604279N: <i>(U)ASE Self Protection Optimization</i>	<b>PROJECT</b> 3308: <i>Technology Development</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3308: <i>Technology Development</i>	4.000	-	0.474	-	0.474	0.474	0.189	0.189	0.189	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Project Unit 3308 Technology Development: Funds efforts that focus on the quick reaction prototyping of tactical Electronic Warfare (EW)/Countermeasures solutions for increased survivability providing friendly forces the self protection necessary for successful mission accomplishment. This program directly addresses the operational requirement of multiple airborne platforms (Strike and Assault) for optimization of EW/Countermeasure solutions across the Department of the Navy. Improved countermeasure capabilities and techniques through Modeling and Simulation, validated in subsequent field testing to address new and emerging threats, capitalize upon upgrades to Aircraft Survivability Equipment systems capabilities for Strike and Assault platforms and evaluate new Radio Frequency Countermeasure (RFCM) & Infra Red Countermeasure (IRCM) technologies.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Technology Development	4.000	-	0.474
<b>Articles:</b>	0		0
<b>FY 2010 Accomplishments:</b> Devise improved countermeasure techniques through M&S and validate candidate techniques through subsequent field testing to address new and emerging IR/RF threats, capitalize upon upgrades to ASE systems capabilities, integration and evaluate new RFCM & IRCM technologies			
<b>FY 2012 Plans:</b> Begin studies and vulnerability analysis for EW programs.			
<b>Accomplishments/Planned Programs Subtotals</b>	4.000	-	0.474

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

N/A

**D. Acquisition Strategy**

An EW study and vulnerability analysis will be conducted in FY 2012. The contractor and contract type will be determined as requirements evolve.

**E. Performance Metrics**

Successfully award a studies and analysis contract in FY 2012.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604279N: <i>(U)ASE Self Protection Optimization</i>	<b>PROJECT</b> 3309: <i>Assault Survivability Optimization</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3309: <i>Assault Survivability Optimization</i>	-	-	0.237	-	0.237	0.237	0.237	0.237	0.237	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project funds helicopter survivability evaluations of advanced Aircraft Survivability equipment for USMC, Navy, and Coalition Aircraft. The Missile Warning System (MWS), Laser Warning System (LWS), and Radar Warning Receiver (RWR) require periodic effectiveness and sustainability upgrades. Resources will be applied to the following areas:

1. Studies and Evaluations of current and future MWS/LWS/RWR Rotary aircraft threats.
2. MWS/LWS/RWR modeling techniques to support future hardware/software upgrades.
3. Evaluation of science and technology development programs in PMA-272 for transition into programs of record.
4. Evaluate sustainability enhancements as platforms migrate to Advanced Displays and Controls.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Studies & Analysis	-	-	0.237
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> Begin studies and analysis for Joint Allied Threat Awareness System (JATAS) programs.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	0.237

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

N/A

**D. Acquisition Strategy**

MWS/LWS/RWR Rotary aircraft threat analysis will be conducted in FY 2012. The contractor and contract type will be determined as requirements evolve.

**E. Performance Metrics**

Successfully award a threat analysis contract in FY 2012.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	63.485	56.542	62.044	-	62.044	71.284	55.079	55.783	56.473	Continuing	Continuing
3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>	63.485	56.542	62.044	-	62.044	71.284	55.079	55.783	56.473	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Provides for the research and development of EW systems, equipment, procedures, and tactical aids for all military services against the threat posed by Radio-Controlled Improvised Explosive Devices (RCIEDs) and to prevent initiation of RCIEDs across the spectrum of Joint military operations. The Navy has been designated as DOD Executive Agent and Single Manager for Military Ground-Based Counter Radio-Controlled Improvised Explosive Warfare (CREW) Technology by DOD Directive 5101.14 of 11 June 2007, requiring RDT&E to develop capabilities that meet global joint requirements. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted, and fixed site operations; provide Joint CREW development of equipment, procedures, and tactical aids to make rapid improvements to performance, supportability and affordability, while maintaining pace with a migrating global threat. This program also includes development of Electromagnetic Environment (EME) data collection and analysis equipment that provides for the research, development and integration of realistic electromagnetic environments for primary use in the development, assessment, modeling, simulation, test and evaluation of CREW systems. Funding for this effort is required for Counter-IED initiatives being transferred from the Joint IED Defeat Organization (JIEDDO) in accordance with DEPSECDEF memo of 14 August 2007 and in accordance with DOD Directive 2000.19E.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	55.611	56.542	63.653	-	63.653
Current President's Budget	63.485	56.542	62.044	-	62.044
Total Adjustments	7.874	-	-1.609	-	-1.609
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	9.820	-			
• SBIR/STTR Transfer	-1.945	-			
• Program Adjustments	-	-	-0.475	-	-0.475
• Rate/Misc Adjustments	-	-	-1.134	-	-1.134
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>
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**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>				<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>	63.485	56.542	62.044	-	62.044	71.284	55.079	55.783	56.473	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

Provides for the research and development of EW systems, equipment, procedures, and tactical aids for all military services against the threat posed by Radio-Controlled Improvised Explosive Devices (RCIEDs) and to prevent initiation of RCIEDs across the spectrum of Joint military operations. The Navy has been designated as DOD Executive Agent and Single Manager for Military Ground-Based Counter Radio-Controlled Improvised Explosive Warfare (CREW) Technology by DOD Directive 5101.14 of 11 June 2007, requiring RDT&E to develop capabilities that meet global joint requirements. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted, and fixed site operations; provide Joint CREW development of equipment, procedures, and tactical aids to make rapid improvements to performance, supportability and affordability, while maintaining pace with a migrating global threat. This program also includes development of Electromagnetic Environment (EME) data collection and analysis equipment that provides for the research, development and integration of realistic electromagnetic environments for primary use in the development, assessment, modeling, simulation, test and evaluation of CREW systems. Funding for this effort is required for Counter-IED initiatives being transferred from the Joint IED Defeat Organization (JIEDDO) in accordance with DEPSECDEF memo of 14 August 2007 and in accordance with DOD Directive 2000.19E.

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

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Joint Counter Radio-Controlled IED Elec Warfare	63.485	56.542	62.044
<b>Articles:</b>	0	0	0
<p><b>Description:</b> Defines the effort required for the design, engineering, development, fabrication and test of contractor's development models for in-house verification and validation for governmental developmental testing for JCREW System of Systems (SoS) to include the System Development and Demonstration (SD&amp;D) Phase. The JCREW SoS approach includes three distinct capabilities that shall be developed and will utilize common component, software, and hardware solutions for an open, flexible, and compatible system design approach that is modular. These capabilities are: mobile dismounted operations, mobile ground, and waterborne transport and combat systems (mounted) and semi-permanent geographical area (fixed) systems. All capabilities will have coalition sharing capabilities. Multiple awards will be made for all capabilities.</p> <p><b>FY 2010 Accomplishments:</b> Awarded two contracts for the development of the Joint Counter Radio Controlled IED Electronic Warfare (JCREW) 3.3 program.</p> <p><b>FY 2011 Plans:</b></p>			

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Fabrication and testing of Engineering Development Models (EDMs) for the Joint Counter Radio Controlled IED Electronic Warfare (JCREW) 3.3 program.  <b><i>FY 2012 Plans:</i></b> Complete Developmental and Operational Testing (OT) for Increment I; Milestone C.			
<b>Accomplishments/Planned Programs Subtotals</b>	63.485	56.542	62.044

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/5509: <i>Explosive Ordnance Disposal Equip</i>	0.000	0.000	61.134	0.000	61.134	18.009	36.692	41.589	35.174	Continuing	Continuing

**D. Acquisition Strategy**

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost effective solution over subprojects' life-cycle. At significant decision points, the AOA will be re-validated or updated to reflect changes in technology and threat. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included. Procurements across the services may be combined to gain quantity discounts.

**E. Performance Metrics**

Gate 6 Milestone B complete 10 Jul 2009; Contract for Preliminary Design Review (PDR) awarded 01 Oct 2009; Achieved successful Preliminary Design Reviews (PDRs) April 2010 and awarded options for Critical Design Reviews (CDRs) in April 2010; Milestone C anticipated in Q2 FY12.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development	C/CPIF	ITT:CA	7.540	12.452	Nov 2010	4.219	Oct 2011	-		4.219	0.000	24.211	Continuing
Software Development	C/CPIF	ITT:CA	8.328	9.888	Nov 2010	2.810	Oct 2011	-		2.810	0.000	21.026	Continuing
Systems Engineering	C/CPIF	ITT:CA	6.890	6.410	Oct 2010	1.100	Nov 2011	-		1.100	Continuing	Continuing	Continuing
ILS	C/CPIF	ITT:CA	1.960	2.450	Oct 2010	1.200	Nov 2011	-		1.200	0.000	5.610	Continuing
System Integration	C/CPIF	ITT:CA	2.700	2.830	Oct 2010	2.400	Nov 2011	-		2.400	0.000	7.930	Continuing
Loadset Development	C/CPIF	ITT:CA	3.630	0.070	Oct 2010	0.500	Nov 2011	-		0.500	0.000	4.200	Continuing
<b>Subtotal</b>			31.048	34.100		12.229		-		12.229			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Loadset Development	FFRDC	JHU/APL:Laurel, MD	-	0.030	Feb 2011	2.998	Nov 2011	-		2.998	0.000	3.028	
Systems Engineering	WR	NSWC:Various	-	-		2.424	Nov 2011	-		2.424	0.000	2.424	
Program Management Support	WR	NAVEODTECHDIV:Indian Head, MD	5.620	2.090	Oct 2010	3.720	Nov 2011	-		3.720	0.000	11.430	Continuing
System Integration	WR	NSWC:Various	-	-		1.938	Nov 2011	-		1.938	0.000	1.938	
Training Development	C/CPFF	SDI, GOV'T SOLUTIONS:LaPlata, MD	0.880	0.490	Oct 2010	3.033	Nov 2011	-		3.033	0.000	4.403	Continuing
Integrated Logistics Support	WR	NSWC:Various	0.500	0.500	Oct 2010	8.383	Nov 2011	-		8.383	0.000	9.383	Continuing
Configuration Management	WR	NSWC:Various	0.980	1.220	Oct 2010	1.446	Nov 2011	-		1.446	0.000	3.646	Continuing
Technical Data	WR	NSWC:Various	-	2.750	Oct 2010	2.831	Nov 2011	-		2.831	0.000	5.581	Continuing
<b>Subtotal</b>			7.980	7.080		26.773		-		26.773	0.000	41.833	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	NSWC:Various	9.230	6.930	Oct 2010	11.000	Nov 2011	-		11.000	0.000	27.160	Continuing
Operational Test & Evaluation	MIPR	ATEC:Arlington, VA	1.890	0.300	Oct 2010	5.800	Mar 2012	-		5.800	0.000	7.990	Continuing
<b>Subtotal</b>			11.120	7.230		16.800		-		16.800	0.000	35.150	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	CACI:Fairfax, VA	4.830	4.890	Oct 2010	4.470	Nov 2011	-		4.470	0.000	14.190	Continuing
Miscellaneous	WR	NSWC:Various	0.633	3.242	Oct 2010	1.772	Nov 2011	-		1.772	0.000	5.647	Continuing
<b>Subtotal</b>			5.463	8.132		6.242		-		6.242	0.000	19.837	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		55.611	56.542		62.044		-	62.044			

**Remarks**

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy DATE: February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>
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	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>JCREW 3.3 (Increment I)</b>	[Redacted]																											
System Development & Demonstration	[Redacted]																											
JCREW 3.3 Tactical Decision Aid Development	[Redacted]																											
JCREW 3.3 System Demonstration, Test & Eval of TDA and EME	[Redacted]																											
JCREW 3.3 Electromagnetic Environment (EME)	[Redacted]																											
Data Collection and Analysis	[Redacted]																											
Developmental Testing/Operational Assessment	[Redacted]																											
Developmental Testing/Operational Testing	[Redacted]																											
Milestone C	[Redacted]																											
LRP	[Redacted]																											
Full Rate Production Decision	[Redacted]																											
Production	[Redacted]																											
 <b>JCREW 3.3 (INCREMENT II)</b>	[Redacted]																											
Technology Demonstration	[Redacted]																											
Tech Readiness Assessment and Performance	[Redacted]																											
Specification Development	[Redacted]																											
System Development & Demonstration	[Redacted]																											
JCREW 3.3 Tactical Decision Aid Upgrade	[Redacted]																											
JCREW 3.3 System Demonstration, Test & Eval of TDA and EME	[Redacted]																											
JCREW 3.3 Electromagnetic Environment (EME)	[Redacted]																											
Data Collection and Analysis	[Redacted]																											
Milestone C	[Redacted]																											
LRP	[Redacted]																											
Full Rate Production Decision	[Redacted]																											
Production	[Redacted]																											
Tech Refresh	[Redacted]																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3177</b>				
JCREW 3.3 (Increment I)	1	2010	1	2015
System Development & Demonstration (Increment I)	1	2010	2	2012
JCREW 3.3 Tactical Decision Aid Development	1	2010	2	2012
JCREW 3.3 System Demonstration, Test and Eval of TDA and EME	1	2011	1	2013
JCREW 3.3 Electromagnetic Environment (EME) Data Collection and Analysis (Increment I)	1	2011	1	2013
Developmental Testing/Operational Assessment	1	2010	2	2012
Developmental Testing/Operational Testing	1	2011	4	2012
Milestone C (Increment I)	2	2012	2	2012
LRIP (Increment I)	2	2012	1	2014
Full Rate Production Decision (Increment I)	3	2013	3	2013
Production (Increment I)	4	2013	2	2016
JCREW 3.3 (Increment II)	1	2010	4	2016
Technology Demonstration	1	2010	4	2011
Tech Readiness Assessment and Performance Specification Development	1	2011	3	2012
System Development & Demonstration (Increment II)	2	2012	1	2014
JCREW 3.3 Tactical Decision Aid Upgrade	1	2013	1	2015
JCREW 3.3 System Demonstration, Test & Eval of TDA and EME	2	2012	3	2015
JCREW 3.3 Electromagnetic Environment (EME) Data Collection and Analysis (Increment II)	2	2012	3	2015
Milestone C (Increment II)	2	2014	2	2014
LRIP (Increment II)	3	2014	2	2015

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604653N: <i>JT Cntr Radio Controlled IED Elec War (JCREW)</i>	<b>PROJECT</b> 3177: <i>Joint Counter Radio-Controlled IED Elec Warfare</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Full Rate Production Decision (Increment II)	3	2015	3	2015
Production (Increment II)	4	2015	4	2016
Tech Refresh	1	2015	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	39.478	25.121	22.665	-	22.665	26.324	16.598	-	-	0.000	130.186
3071: <i>Very Low Collateral Damage Weapon</i>	8.400	-	-	-	-	-	-	-	-	0.000	8.400
3214: <i>Fuze Development Program</i>	19.031	25.121	22.665	-	22.665	26.324	16.598	-	-	0.000	109.739
3215: <i>Strike Weapons Technology Demonstrations</i>	12.047	-	-	-	-	-	-	-	-	0.000	12.047

**Note**

1. This PE began in FY10 and includes FMU-164 Fuze and Hard Target Void Sensing Fuze (HTVSF) under Project 3214. The HTVSF and Joint Surface Warfare (JSuW) were previously funded under PE 0604329N Project 3072 Small Diameter Bomb II.
2. The FMU-164 Program is currently in the Government Technology Development Phase, with the Contractor Phase awarding in March 2011 which will continue through FY13.
3. Project 3071 Very Low Collateral Damage Weapon was established in October 2010 as FY10 Overseas Contingency Operations (OCO) funding.

**A. Mission Description and Budget Item Justification**

The Precision Strike Weapons Development program provides for initial and continuing development of strike weapons consisting of armament, munitions, and weapon subsystems to allow for the horizontal integration among current and future weapon system capabilities to include Anti-Surface Warfare (ASuW) and the weaponization of Unmanned Aerial Systems (UAS). This program will also provide the Navy with the opportunity to improve upon the accuracy, lethality, interoperability, and overall effectiveness of current and future precision strike weapons. The OCO funding is provided for the development of the low collateral damage weapons and Precision Lethality (PL) weapons.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i>	PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>
BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	40.757	25.121	28.791	-	28.791
Current President's Budget	39.478	25.121	22.665	-	22.665
Total Adjustments	-1.279	-	-6.126	-	-6.126
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.743	-			
• SBIR/STTR Transfer	-0.407	-			
• Program Adjustments	-	-	-5.596	-	-5.596
• Section 219 Reprogramming	-0.127	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.530	-	-0.530
• Congressional General Reductions Adjustments	-0.002	-	-	-	-

**Change Summary Explanation**

Technical: Not applicable.

FMU-164 Schedule: The revised Acquisition Strategy (AS) for the FMU-164 was approved by Milestone Decision Authority (MDA) on 16 DEC 2009. The impacts to the original AS schedule included the Material Development Decision to enter the Program into the Technology Development phase instead of at Milestone B. MS B was moved from first quarter FY13 to fourth quarter FY13, Milestone C moved from fourth quarter FY15 to fourth quarter FY16. Contract award moved from the first quarter of FY11 to the second quarter of FY11 due to additional time required for the Request For Information (RFI) and Source Selection process. The Technology Development phase was extended from first quarter FY13 to fourth quarter FY13. Critical Design Review (CDR) moved from second quarter FY13 to first quarter FY14, Technical Readiness Review (TRR) was moved from fourth quarter FY13 to third quarter FY14, Preproduction Readiness Review (PRR) was moved from third quarter FY15 to second quarter FY16. First test article quantity FY11-Quantity 512 changed to Quantity 0, FY13-Quantity 1130 changed to Quantity 6.

HTVSF Schedule: The HTVSF Engineering and Manufacturing Development Phase (EMD) was adjusted to align with the Milestone B decision. The HTVSF MS B moved from fourth quarter of FY10 to second quarter of FY11. MS C moved from second quarter FY13 to second quarter FY14, Full Rate Production (FRP) decision moved from first quarter of FY14 to third quarter FY15, EMD CDR moved from second quarter FY11 to fourth quarter FY11, Integrated Operational Test and Evaluation (IOT&E) moved from third quarter FY13 to first quarter FY15, Low-Rate Initial Production (LRIP) Contract Award (CTA) moved from second quarter of FY13 to beginning of third quarter of FY14. First test article quantity FY11-Quantity 5 changed to Quantity 30, FY12-Quantity 40 changed to Quantity 26. Quantity 3 for FY13, and Quantity 3 for FY14 were added to provide further details for program.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**  
PE 0604659N: *(U)Precision Strike Weapons Development Program*

The FMU-164 integration requirements which include preparation for pilot/platform interface updates, Joint Direct Attack Munition (JDAM) Block 09 S/W updates, GBU-24/FZU-48 flight certification, and GBU-31/FZU-48 flight certification will start prior to the Technology Development contract award to provide risk reduction to the program. BLU-109 Bomb (inerts) are required to support FMU-164 development and testing requirements.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3071: <i>Very Low Collateral Damage Weapon</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3071: <i>Very Low Collateral Damage Weapon</i>	8.400	-	-	-	-	-	-	-	-	0.000	8.400
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

OSD Joint Rapid Acquisition Cell directed execution of joint Precision Lethality (PL) MK-82 Quick Reaction Capability (QRC) to support Joint Urgent Operational Need (JUON) CC-0381 for a Very Low Collateral Damage Weapon (VLCDW). Provides low lethality in far field using non-fragmenting carbon fiber MK-82 form factor case to minimize collateral damage outside near field blast effect. Provides high lethality in near field using a specially tuned variant of high impulse Multi-phase Blast Explosive (MBX) similar to Small Diameter Bomb (SDB).

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Very Low Collateral Damage Weapon	8.400	-	-
<b>Articles:</b>	0		
<b>Description:</b> Funding for development of a carbon fiber composite for General Purpose Bombs supporting a JUON for a VLCDW. The warhead matches the shape/mass properties of a MK82 such that it integrates with inventory of precision guidance kits and aircraft.			
<b>FY 2010 Accomplishments:</b> Initiated VLCDW program and accomplished System Requirements Review (SRR) and Preliminary Design Review (PDR).			
<b>Accomplishments/Planned Programs Subtotals</b>	8.400	-	-

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

N/A

**D. Acquisition Strategy**

OSD Joint Rapid Acquisition Cell directed execution of joint PL MK-82 QRC to support JUON CC-0381 for a VLCDW.

**E. Performance Metrics**

Accomplished SRR and PDR.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3071: <i>Very Low Collateral Damage Weapon</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	MIPR	Air Force:Eglin AFB, FL	2.200	-		-		-		-	0.000	2.200	
Primary Hardware Development	Various	Various:Various	1.200	-		-		-		-	0.000	1.200	
<b>Subtotal</b>			3.400	-		-		-		-	0.000	3.400	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NAWC WD:China Lake, CA	1.000	-		-		-		-	0.000	1.000	
<b>Subtotal</b>			1.000	-		-		-		-	0.000	1.000	

<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Carrier Suitability Testing	WR	NAWC AD:Patuxent River, MD	1.000	-		-		-		-	0.000	1.000	
Safe Escape Analysis	WR	NAWC AD:Patuxent River, MD	1.800	-		-		-		-	0.000	1.800	
<b>Subtotal</b>			2.800	-		-		-		-	0.000	2.800	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	NAWC WD:China Lake, CA	0.700	-		-		-		-	0.000	0.700	
Government Support	WR		0.500	-		-		-		-	0.000	0.500	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy											DATE: February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>				<b>PROJECT</b> 3071: <i>Very Low Collateral Damage Weapon</i>					
Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		NAWC AD:Patuxent River, MD											
<b>Subtotal</b>			1.200	-		-		-		-	0.000	1.200	
			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			8.400	-		-		-		-	0.000	8.400	

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3071: <i>Very Low Collateral Damage Weapon</i>
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Very Low Collateral Damage Weapon	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Acquisition Milestones</b>																																
Milestones	JROC Direction ▲							Navy IOC ▲																								
<b>Systems Development</b>																																
Reviews	SRR ■		PDR ■		CDR ■																											
<b>Test &amp; Evaluation</b>																																
Technical Evaluation								DT																								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3071: <i>Very Low Collateral Damage Weapon</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Very Low Collateral Damage Weapon</i></b>				
Acquisition Milestones: Milestones: JROC Direction	1	2010	1	2010
Acquisition Milestones: Milestones: Navy IOC	4	2011	4	2011
Systems Development: Reviews: SRR	1	2010	1	2010
Systems Development: Reviews: PDR	3	2010	3	2010
Systems Development: Reviews: CDR	1	2011	1	2011
Test & Evaluation: Technical Evaluation: DT	2	2011	3	2011



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3214: <i>Fuze Development Program</i>	19.031	25.121	22.665	-	22.665	26.324	16.598	-	-	0.000	109.739
Quantity of RDT&E Articles	0	30	26	0	26	9	3	0	0		

**Note**

1. The FMU-164 Program is currently in the Government Technology Development Phase, with the Contractor Phase awarding in March 2011 which will continue through FY13.

**A. Mission Description and Budget Item Justification**

The Precision Strike Weapons Development program provides for initial and continuing development of strike weapons consisting of armament, munitions, and weapon subsystems to allow for the horizontal integration among current and future weapon system capabilities to include Anti-Surface Warfare (ASuW) and the weaponization of Unmanned Aerial Systems (UAS). This program will also provide the Navy with the opportunity to improve upon the accuracy, lethality, interoperability, and overall effectiveness of current and future precision strike weapons.

The current funding profile provides funding for the FMU-164 Bomb Fuze and the Hard Target Void Sensing Fuze (HTVSF). The Technology Development and Engineering and Manufacturing Development (EMD) phases of the FMU-164 Bomb Fuze program are intended to upgrade and expand the capabilities of the Navy's bomb fuze inventory. The FMU-164 is the next generation bomb fuze used with general purpose and guided bombs. The FMU-164 will provide a capability upgrade to the existing FMU-139 and FMU-143 Bomb Fuzes. The capability upgrades include in-flight cockpit selectability via a Serial Data Interface (SDI) and increased reliability. Software updates including H8, H10, H6.1, and 25X Operational Flight Program integration testing. HTVSF is an FY08 Joint Capability Technology Demonstration (JCTD) sponsored by United States Strategic Command in coordination with the United States Air Force and United States Navy. The JCTD was a 27 month risk reduction program that was awarded to two Contractors in 3rd QTR FY08 to perform design, test, and manufacturing activities leading to a down-select to a single Contractor for EMD and production. The JCTD was completed in 3th QTR FY10 and the EMD contract is scheduled to be awarded to a single Contractor in 2nd QTR FY11. HTVSF is designed to prosecute harder, deeper, and more complex targets that exceeded design parameters of existing conventional kinetic strike capabilities. HTVSF will be used only with BLU-109 Joint Direct Attack Munitions (JDAM).

Note: First test article quantity for FMU-164 includes FY13-Quantity 6  
 First test article quantity for HTVSF includes FY11-Quantity 30, FY 12-Quantity 26 , FY13-Quantity 3, FY14-Quantity 3

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> FMU-164 Primary Hardware Development	16.964	17.101	15.920
<b>Articles:</b>	0	0	0
<b>Description:</b> The FMU-164 funding develops the bomb fuze to replace the FMU-139 and FMU-143 legacy bomb fuze. The vendor's efforts include providing platform integration support.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b><i>FY 2010 Accomplishments:</i></b> Commenced FMU-164 requirement development, logical analysis and System Engineering Technical Reviews leading up to Preliminary Design Review (PDR) and MS B approval. Commence aircraft integration and ancillary hardware development including H8E, H6.1, 25X and JDAM software updates.</p> <p><b><i>FY 2011 Plans:</i></b> Commence FMU-164 design confidence testing including explosive train reliability, insensitive munition, hazard classification, electro-magnetic environment, product oriented packaging and target penetration (sled) tests. These tests will be conducted to gather design information. RDT&amp;E test units are consumed during testing by the contractor.</p> <p><b><i>FY 2012 Plans:</i></b> Commence FMU-164 PDR which is scheduled to be completed in FY12 along with a downselect to one vendor for the EMD contract award in FY13. Conduct Electromagnetic, Environmental, Effects (E3) Testing.</p>				
<p><b><i>Title:</i></b> FMU-164 Design Qualification</p> <p><b><i>Description:</i></b> The FMU-164 funding will be used to qualify Fuze to weapon and Fuze to aircraft interfaces.</p> <p><b><i>FY 2011 Plans:</i></b> Continue FMU-164 design development and testing of the electrical firing circuit and SDI. The cockpit selectability Key Performance Parameter will be tested using Software-In-The-Loop (SIL) prototypes with F/A-18 Operational Flight Program and JDAM tail kits.</p> <p><b><i>FY 2012 Plans:</i></b> Receive SIL units from 2 Contractors for use with H8, H10, H6.1, and 25X Operational Flight Program integration testing.</p>		-	2.570 0	2.295 0
<p><b><i>Title:</i></b> HTVSF Hardware Development</p> <p><b><i>Description:</i></b> HTVSF hardware development funding will be used to qualify the fuze booster as part of the BLU-109 explosive train and begin F/A-18E/F software Operational Flight Program development.</p> <p><b><i>FY 2010 Accomplishments:</i></b> Continued HTVSF systems engineering, hardware development and modeling &amp; simulation and target construction. This phase includes initial F/A-18 E/F H8, H10, H6.1, and 25X Operational Flight Program software development and integration testing.</p> <p><b><i>FY 2011 Plans:</i></b></p>		2.067 0	5.450 30	4.450 26

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Funding is for F/A-18 Operational Flight Program development, mission planning, procure sled and flight test hardware, execute tests and procure EMD test assets.  <b>FY 2012 Plans:</b> Continue F/A-18 E/F integration, begin mission planning software, procure EMD test assets and conduct testing.			
<b>Accomplishments/Planned Programs Subtotals</b>	19.031	25.121	22.665

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Proc/PE 020803: <i>USAF</i>	0.000	0.000	0.000	0.000	0.000	0.000	18.800	37.500	38.500	0.000	94.800
• RDTE/ PE 0604602F: <i>(JCTD) Air Force</i>	0.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.000
• RDTE/ PE 064635F: <i>Air Force (SDD)</i>	0.000	18.800	33.400	0.000	33.400	27.900	5.400	0.000	0.000	0.000	85.500
• PAN&MC/014500a: <i>General Purpose Bombs HTVSF</i>	0.000	0.000	0.000	0.000	0.000	0.000	2.000	4.300	4.300	0.000	10.600
• PAN&MC/014500b: <i>General Purpose Bombs FMU-164</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.753	0.000	6.753

**D. Acquisition Strategy**

The FMU-164 will provide a capability upgrade to the existing FMU-139 and FMU-143 Bomb Fuzes. The capability upgrades include in-flight cockpit selectability via a SDI and increased reliability. The FMU-164 will also be Insensitive Munition compliant. Program plan consists of Technology Development starting in FY10 followed by EMD starting in FY13, followed by LRIP starting in FY16 and FRP starting in FY17.

The HTVSF JCTD is considered a risk reduction effort. The JCTD supports 2 competitively selected sources for development and testing of initial prototyping. Following the JCTD, a down select to a single source will occur and EMD is scheduled in FY11 followed by LRIP in FY14 and FRP in FY15.

**E. Performance Metrics**

Successfully complete milestones: Enter Milestone B (EMD), System Functional Review (SFR), PDR, and CDR.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: (U)Precision Strike Weapons Development Program	<b>PROJECT</b> 3214: Fuze Development Program
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Primary Hardware Development FMU-164	C/CPIF	TBD:TBD	-	11.167	Mar 2011	9.475	Jan 2012	-		9.475	18.167	38.809	38.809
Primary Hardware Development HTVSF	C/CPIF	TBD:TBD	-	2.121	Mar 2011	1.000	Jan 2012	-		1.000	2.528	5.649	5.649
<b>Subtotal</b>			-	13.288		10.475		-		10.475	20.695	44.458	44.458

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Software Development FMU-164	WR	NAWC WD:China Lake, CA	0.802	1.383	Jun 2011	1.465	Jun 2012	-		1.465	8.255	11.905	
Software Development FMU-164	C/CPIF	Boeing:St.Louis, MO	0.303	0.406	Mar 2011	0.497	Mar 2012	-		0.497	1.460	2.666	2.666
Software Development FMU-164	MIPR	Air Force:Eglin AFB, FL	0.500	0.150	Jun 2011	0.150	Jun 2012	-		0.150	0.000	0.800	
Integrated Logistic Support FMU-164	WR	NAWC AD:Patuxent River, MD	0.035	0.037	Nov 2010	0.043	Nov 2011	-		0.043	0.000	0.115	
Software Development HTVSF	WR	NAWC WD:China Lake, CA	0.123	1.554	Jan 2011	0.900	Nov 2011	-		0.900	1.549	4.126	
Software Development HTVSF	C/CPIF	Boeing:St.Louis, MO	0.211	0.468	Mar 2011	0.326	Mar 2012	-		0.326	0.511	1.516	1.516
Integrated Logistic Support HTVSF	WR	NAWC AD:Patuxent River, MD	-	0.037	Nov 2010	0.043	Nov 2011	-		0.043	0.177	0.257	
Prior years cost no longer funded in the FYDP	Various	Various:Various	0.250	-		-		-		-	0.000	0.250	
<b>Subtotal</b>			2.224	4.035		3.424		-		3.424	11.952	21.635	

**Remarks**  
Changes are based on updated FMU-164 schedule

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Operational Test & Evaluation FMU-164	WR	NAWC AD:Patuxent River, MD	1.500	-		-		-		-	0.000	1.500	
Development Test & Evaluation FMU-164	WR	OPTVFOR:Norfolk, VA	0.140	0.140	Jan 2011	0.140	Feb 2012	-		0.140	0.300	0.720	
Development Test & Evaluation HTVSF	WR	OPTVFOR:Norfolk, VA	0.020	0.020	Nov 2010	0.020	Nov 2011	-		0.020	0.040	0.100	
Operational Test & Evaluation HTVSF	WR	Various:Various	-	-		0.200	Nov 2011	-		0.200	0.020	0.220	
Operational Test & Evaluation HTVSF	WR	NAWC AD:Patuxent River, MD	-	-		0.900	Nov 2011	-		0.900	0.000	0.900	
Prior years cost no longer funded in the FYDP	Various	Various:Various	7.559	-		-		-		-	0.000	7.559	
<b>Subtotal</b>			9.219	0.160		1.260		-		1.260	0.360	10.999	

**Remarks**  
Changes are based on updated FMU-164 schedule and BLU-109 Bomb (inerts) required to support FMU-164 RDT&E requirements.

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government Support FMU-164	WR	NAWC WD:China Lake, CA	3.528	3.481	Nov 2010	3.636	Nov 2011	-		3.636	6.959	17.604	
Government Support FMU-164	WR	NAWC AD:Patuxent River, MD	1.476	1.376	Nov 2010	1.684	Nov 2011	-		1.684	4.500	9.036	
Program Management Support FMU-164	WR	Various:Various	0.300	0.251	Nov 2010	0.259	Nov 2011	-		0.259	0.833	1.643	
Program Management Support FMU-164	C/CPFF	NAWC AD:Patuxent River, MD	1.151	1.215	Dec 2010	0.778	Dec 2011	-		0.778	2.559	5.703	5.703
Travel	C/T&M	NAWC AD:Patuxent River, MD	0.083	0.065	Jan 2011	0.088	Jan 2012	-		0.088	0.264	0.500	
Government Support HTVSF	WR		0.800	1.000	Nov 2010	0.811	Nov 2011	-		0.811	1.166	3.777	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		NAWC WD:China Lake, CA											
Government Support HTVSF	WR	NAWC AD:Patuxent River, MD	0.250	0.250	Nov 2010	0.250	Nov 2011	-		0.250	0.250	1.000	
<b>Subtotal</b>			7.588	7.638		7.506		-		7.506	16.531	39.263	

**Remarks**  
Changes are based on updated FMU-164 schedule

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	19.031	25.121		22.665		-		22.665	49.538	116.355	

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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Hard Target Void Sensing Fuze (HTVSF)	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016							
	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				
<b>Acquisition Milestones</b>																																
Milestones						▲																										
<b>Systems Development</b>																																
Hardware Development	JCTD				Trans EMD				EMD																							
Reviews			■					■																								
Contract Award						●		●			●			●																		
Test Unit Deliveries									62 Test Deliveries																							
<b>Test &amp; Evaluation</b>																																
Technical Evaluation									DT&E																							
Operational Evaluation																																
<b>Production Milestones</b>																																
Contract Awards																																
<b>Deliveries</b>																																

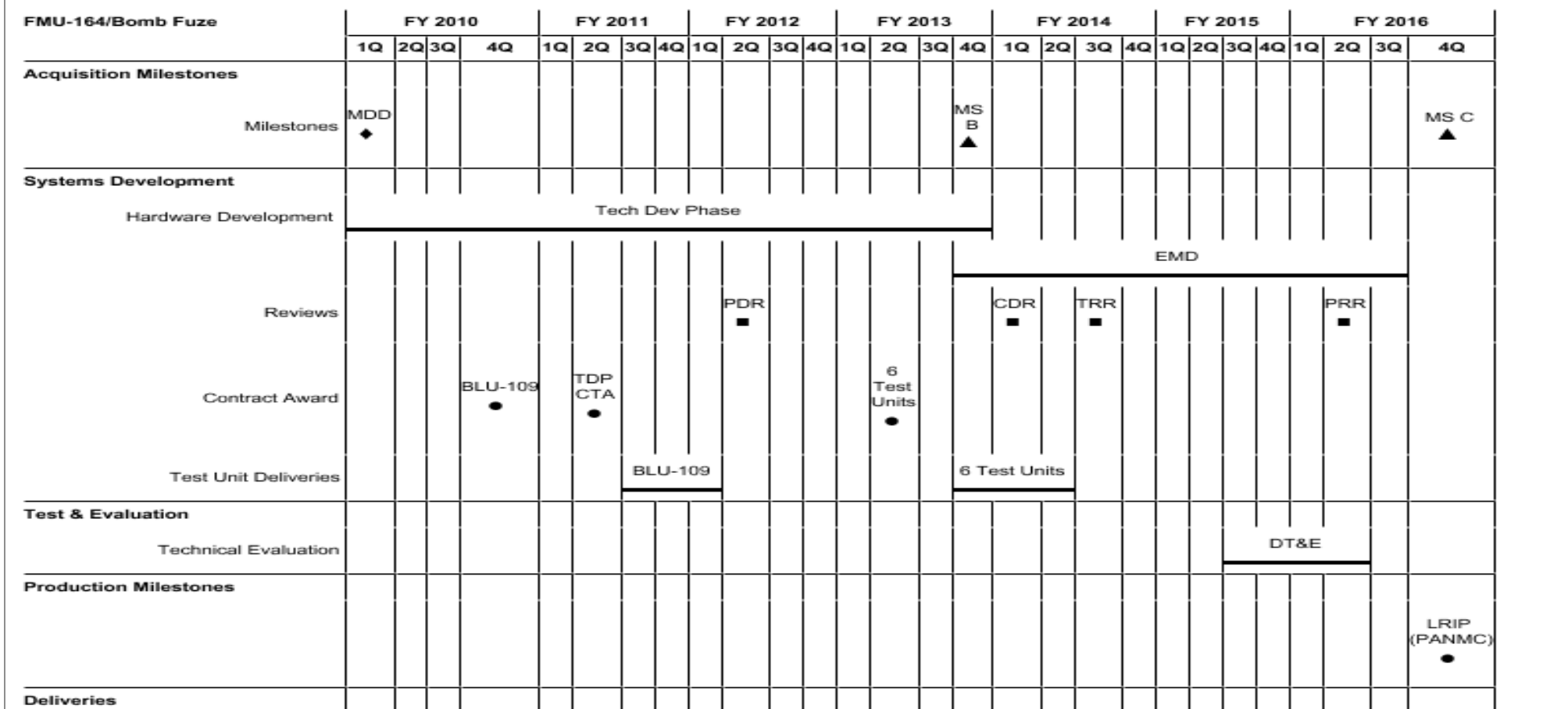
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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Hard Target Void Sensing Fuze (HTVSF)</b>				
Acquisition Milestones: Milestones: Milestone B (MS B)	2	2011	2	2011
Acquisition Milestones: Milestones: Full Rate Production Decision (FRPD)	3	2015	3	2015
Acquisition Milestones: Milestones: Milestone C (MS C)	2	2014	2	2014
Acquisition Milestones: Milestones: IOC	4	2015	4	2015
Systems Development: Hardware Development: JCTD	1	2010	3	2010
Systems Development: Hardware Development: Transition to Engineering, Manufacturing, and Development Phase (EMD)	4	2010	2	2011
Systems Development: Hardware Development: Engineering, Manufacturing, and Development Phase (EMD)	3	2011	2	2014
Systems Development: Reviews: JCTD Critical Design Review (CDR)	3	2010	3	2010
Systems Development: Reviews: EMD Critical Design Review (CDR)	4	2011	4	2011
Systems Development: Contract Award: Engineering, Manufacturing, and Development Phase (EMD)	2	2011	2	2011
Systems Development: Contract Award: 30 Test Units	3	2011	3	2011
Systems Development: Contract Award: 26 Test Units	2	2012	2	2012
Systems Development: Contract Award: 3 Test Units	1	2013	1	2013
Systems Development: Contract Award: 3 Test Unit	1	2014	1	2014
Systems Development: Test Unit Deliveries: 62 Test Deliveries	4	2011	2	2014
Test & Evaluation: Technical Evaluation: Developmental Test and Evaluation (DT&E)	4	2011	2	2014
Test & Evaluation: Operational Evaluation: Intergrational Operational Test and Evaluation (IOT&E)	1	2015	2	2015
	3	2014	3	2014

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: Low-Rate Initial Production (LRIP) Award (PANMC)				
Production Milestones: Contract Awards: Full Rate Production-1 (FRP) Award (PANMC)	4	2015	4	2015
Production Milestones: Contract Awards: Full Rate Production-2 (FRP) Award (PANMC)	3	2016	3	2016
Deliveries: LRIP Deliveries 50 (PANMC)	2	2015	2	2016
Deliveries: FRP 1 Deliveries 225 (PANMC)	2	2016	4	2016
<b>FMU-164/Bomb Fuze</b>				
Acquisition Milestones: Milestones: FMU-164 Material Development Decision (MDD)	1	2010	1	2010
Acquisition Milestones: Milestones: FMU-164 MS B	4	2013	4	2013
Acquisition Milestones: Milestones: FMU-164 MS C	4	2016	4	2016
Systems Development: Hardware Development: Technology Development Phase	1	2010	4	2013
Systems Development: Hardware Development: Engineering, Manufacturing, and Development (EMD)	4	2013	3	2016
Systems Development: Reviews: FMU-164 Preliminary Design Review (PDR)	2	2012	2	2012
Systems Development: Reviews: FMU-164 Critical Design Review (CDR)	1	2014	1	2014
Systems Development: Reviews: FMU-164 Technical Readiness Review (TRR)	3	2014	3	2014
Systems Development: Reviews: FMU-164 Preproduction Readiness Review (PRR)	2	2016	2	2016
Systems Development: Contract Award: BLU-109 Test Unit (RDT&E)	4	2010	4	2010
Systems Development: Contract Award: FMU-164 Technology Development Phase Contract Award	2	2011	2	2011
Systems Development: Contract Award: 6 Test Units (RDT&E)	2	2013	2	2013
Systems Development: Test Unit Deliveries: BLU-109 Test Unit (RDT&E)	3	2011	1	2012
Systems Development: Test Unit Deliveries: 6 Test Units (RDT&E)	4	2013	2	2014

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3214: <i>Fuze Development Program</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test & Evaluation: Technical Evaluation: Developmental Test and Evaluation (DT&E)	3	2015	2	2016
Production Milestones: Low-Rate Initial Production (LRIP) Award (PANMC)	4	2016	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3215: <i>Strike Weapons Technology Demonstrations</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3215: <i>Strike Weapons Technology Demonstrations</i>	12.047	-	-	-	-	-	-	-	-	0.000	12.047
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Precision Strike Weapons Development program provides for initial and continuing development of strike weapons consisting of armament, munitions, and weapon subsystems to allow for the horizontal integration among current and future weapon system capabilities to include Anti-Surface Warfare (ASuW) and the weaponization of Unmanned Aerial Systems. This program will also provide the Navy with the opportunity to improve upon the accuracy, lethality, interoperability, and overall effectiveness of current and future precision strike weapons.

The Strike Weapons Technology Demonstrations project unit currently consists of the Joint Capability Technology Demonstrations (JCTD) effort. Overall intent of the JCTD is to demonstrate, operationally assess, rapidly deploy, and transition capability solutions and innovative concepts to address the joint, coalition and interagency operational gaps and shortfalls. The Combatant Commands drive JCTDs through their stated operational priorities and needs, which are applied to an agile acquisition process that yields results years ahead of traditional material development cycles.

The JCTD will demonstrate robust, end-to-end kill chains to engage enemy surface combatants. Intelligence Surveillance and Reconnaissance (ISR) platforms will include the USAF E-8 Joint Surveillance Targeting Attack Radar System (JSTARS) and the USN P-3 Littoral Surveillance Radar System (LSRS). The launch platform will be the F/A-18E/F Super Hornet. Weapons will include the AGM-154C Joint Stand-off Weapon (JSOW-C-1), and the AGM-84K Stand-off Land Attack Missile-Expanded Response (SLAM-ER). In the case of the SLAM-ER, the FA-18 will translate ISR Link-16 targeting information and transmit that information to the SLAM-ER with J3.3/J3.5 messages via the AWW-13 pod. The focus will be on in-flight targeting messages going directly from the ISR platforms to the weapons themselves.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Strike Weapons Technology Demonstrations	12.047	-	-
<b>Articles:</b>	0		
<b>FY 2010 Accomplishments:</b>			
The JCTD has completed the Weapons Data Link Network (WDLN) Advanced Concept Technology Demonstration (ACTD) and its networking protocols by integrating the WDLN messages into Intelligence Surveillance and Reconnaissance platforms in accordance with MIL-STD-6016C; the launch platform and weapons will integrate the messages as part of their programs of record. Platform modifications will be centered around the integration of the WDLN messages (hereafter referred to as the Net-Enabled Weapon (NEW) messages) into aircraft mission computers to transmit and receive joint targeting data. Weapon			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604659N: <i>(U)Precision Strike Weapons Development Program</i>	<b>PROJECT</b> 3215: <i>Strike Weapons Technology Demonstrations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
modifications (outside of Joint Surface Warfare (JSuW) JCTD funding but included as part of the capability) include the avionics changes necessary to transmit and receive the WDLN message set to enable targeting of surface ships.			
<b>Accomplishments/Planned Programs Subtotals</b>	12.047	-	-

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

N/A

**D. Acquisition Strategy**

The contracting strategy for JSuW JCTD utilized Raytheon for LSRS and Northrop Grumman for JSTARS platforms to demonstrate Link 16 capabilities with Network Enabled Weapons.

**E. Performance Metrics**

The JSuW JCTD has completed the WDLN ACTD and its networking protocols by integrating the J-11 messages set via JSTARS and the USN P-3 LSRS into ISR platforms.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	38.711	34.793	33.621	-	33.621	33.181	33.281	33.612	33.795	Continuing	Continuing
0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>	0.913	0.853	0.792	-	0.792	0.774	0.788	0.792	0.795	Continuing	Continuing
2144: <i>Space &amp; Elec Warfare Engineering</i>	10.761	10.059	9.264	-	9.264	9.114	8.716	8.768	8.591	Continuing	Continuing
2357: <i>Maritime Battle Center</i>	27.037	23.881	8.877	-	8.877	8.812	8.958	9.059	9.193	Continuing	Continuing
3319: <i>Fleet Experimentation</i>	-	-	14.688	-	14.688	14.481	14.819	14.993	15.216	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This Program Element (PE) contains four projects: Maritime Battle Center (MBC), Fleet Experimentation (beginning in FY12 with funding moving from MBC), Over-the-Horizon Targeting (OTH-T), and Space and Electronic Warfare (SEW) Engineering. The MBC project (2357) focuses on fleet experimentation in order to eliminate war fighting gaps and validate Navy Concept of Operations (CONOPS) and doctrine. The MBC also manages the Sea Trial program of fleet experimentation that is administered by the Sea Trial Executive Steering Group (STESG). Both MBC and Sea Trial integrate emergent concepts and technologies through experiments, analysis, modeling and simulation to support war fighting capability development. Sea Trial experimentation is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) war fighting gaps through focused operational agent (Commander Second Fleet, Commander Third Fleet and Commander Naval Network Warfare Command) led experimentation. The flag level Sea Trial Executive Steering Group prioritizes proposed Sea Trial experiments annually. The MBC will also serve as the Navy representative to the Joint Battle Center and the battle labs of other services.

The OTH-T and SEW Engineering projects (0798 and 2144 respectively) are systems engineering non-acquisition programs to develop, test, implement technical authority, and validate naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support naval missions in the Joint and Coalition Theater. The mission of these projects are carried out by multiple tasks that are used to ensure naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into service-oriented architecture delivering net centric warfare capability. Additionally, these projects ensure that (1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the naval C4ISR architecture and enhance war fighting capability as related to the objectives of National Defense Strategy, evolving joint visions and direction, such as net centric capability, and are guided by warfighter requirements; (2) that SEW systems and systems integration efforts involve leading-edge technology transfer of information processing technologies primarily through integration of government and commercial off-the-shelf (GOTS/COTS) products to enhance the Navy's operational capability, interoperability, warfighter effectiveness, flexible reconfiguration, as well as reduce costs; and (3) that SEW systems integration efforts promote the delivery of Information Dominance and the Navy's contribution to the Global Information Grid (GIG).

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	40.328	34.793	43.166	-	43.166
Current President's Budget	38.711	34.793	33.621	-	33.621
Total Adjustments	-1.617	-	-9.545	-	-9.545
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.800	-			
• SBIR/STTR Transfer	-0.619	-			
• Program Adjustments	-	-	-8.932	-	-8.932
• Section 219 Reprogramming	-0.183	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.613	-	-0.613
• Congressional General Reductions Adjustments	-0.015	-	-	-	-



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>	0.913	0.853	0.792	-	0.792	0.774	0.788	0.792	0.795	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Allied/Coalition Interoperability and Information Dominance (ACIID) program advances network centric warfare and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) interoperability with our Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO) and other allied and coalition partners. The program determines allied and coalition maritime operational gaps, identifies Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) solutions with the potential to fill those gaps, and assesses these solutions and associated concepts of operation in laboratory and at-sea environments. The ACIID program includes integration and testing in support of joint and coalition war fighting capabilities, including interoperability testing of C4ISR equipments. Coalition and joint interoperability is critical for future maritime operations, especially as the US Navy expands Internet Protocol (IP) networking throughout the fleet via Consolidated Afloat Networks and Enterprise Services (CANES), Next Generation Networks (NGEN), Multi-National Information Sharing (MNIS) and with the Global Information Grid (GiG). Currently, IP connectivity with AUSCANNZUKUS and other allied/coalition forces are limited, requiring extensive backhaul through ashore infrastructure. Higher bandwidth solutions suitable for use over tactical networks require development and assessment for emerging coalition and joint interoperability requirements, such as Coalition Naval Tactical Networking (CNTN) and Maritime Domain Awareness (MDA). Increases in data throughput are required for the effective exchange of rich data sets and services via Service Oriented Architectures (SOA) within the limitations of High Frequency (HF), Ultra-High Frequency (UHF) and other portions of the radio frequency spectrum, coupled with appropriate Information Assurance and Computer Network Defense (IA/CND) mechanisms. Development and assessment of potential solutions will integrate improved IP capabilities with the Advanced Digital Network Systems (ADNS) and existing international standards (e.g. NATO Standardization Agreements (STANAGS) 5066 and 4693). The continued development and refinement of advanced tactical networking technologies and protocols, as well as automatic link establishment standards, will provide for a significant improvement in data sharing within, and between, coalition maritime elements.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> ADVANCED RELAY CAPABILITIES	-	0.853	0.792
<b>Articles:</b>		0	0
<b>Description:</b> Prior to FY 2011, R-2a activity "Advanced Relay Capabilities" was divided between Advanced Relay/Wireless/Antenna Technologies and Subnet Relay. With Subnet Relay now a program of record, initiatives to improve the system and its operational use in the coalition context have started to mirror or become a subset of the FY 2010 Advanced Relay/Wireless/Antenna Technologies effort. Subnet Relay and Advanced Relay initiatives need to address multi-bearer routing, High Assurance Internet Protocol Encryption (HAPE) and SOA in a similar and integrated manner. For FY 2011 and out, these two efforts have been merged into one integrated program entitled Advanced Relay Capabilities.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<p><b>FY 2011 Plans:</b> Continue the development and refinement of advanced relay capabilities that support Coalition Naval Tactical Networking (CNTN). Solutions will address advanced relay technologies, coalition routing architectures (with an emphasis on cipher text or "black core" routing), application architectures/configurations and Information Assurance/Computer Network Defense (IA/CND) solutions that maximize network efficiency using multiple, dissimilar bearers in the CNTN environment on Combined Enterprise Regional Information Exchange System (CENTRIXS). Integrate these advanced solutions with High Assurance Internet Protocol Encryption (HAIZE) devices and SOA in a coalition networking environment. Continue to progress the standardization of Subnet Relay into North Atlantic Treaty Organization Standardization Agreements (STANAGs) 4691 (Subnet Relay) and 5066 Edition 3 High Frequency Internet Protocol (HFIP/Ultra-HFIP multi hop). Continue to refine broadband solutions, such as wide-band Ultrahigh Frequency (UHF) and Spatially Aware Wireless Networking (SPAWN), which enhance throughput and promote allied interoperability. Assess the ability of these solutions to support SOA. Exploit venues of opportunity, such as Trident Warrior, to evaluate and validate the individual technologies as well as integrated solutions through testing, trials and demonstrations.</p> <p><b>FY 2012 Plans:</b> Continue the development and refinement of advanced relay capabilities that promote interoperability with Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO) and other allied/coalition forces and support CNTN and Network Operations Without Shore (NOWS). Solutions will address higher bandwidth technologies, such as wide-band High Frequency (HF), wide-band UHF and broadband directional communications/networking, advanced relay technologies, coalition routing architectures (with an emphasis on cipher-text or "black core" routing), application and service architectures supporting CNTN/NOWS, and IA/CND solutions. Maximize interoperability and network efficiency using multiple, dissimilar bearers and integrate these advanced solutions with HAIZE devices and SOA in a CNTN/NOWS coalition networking environment. Continue to progress the standardization of Subnet Relay (renamed MARLIN - Maritime Relayed Line of Sight Network) and HFIP into NATO STANAGs 4693 and 5066 respectively. Exploit venues of opportunity, such as Trident Warrior, to evaluate and validate the individual technologies as well as integrated solutions through testing, trials and demonstrations with AUSCANNZUKUS and other allied/coalition partners.</p>				
<p><b>Title:</b> ADVANCED RELAY/WIRELESS/ANTENNA TECHNOLOGIES</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The decrease in FY 2011 is due to this activity being realigned to "Advanced Relay Capabilities."</p> <p><b>FY 2010 Accomplishments:</b> - Designed, fabricated and tested Generation 6 Spatially Aware Wireless Networking (SPAWN) antennas in an integrated form with wireless network equipment. Performed an Over-the-Horizon Targeting (OTH-T) field demonstration of SPAWN in Trident Warrior or similar venue including airborne relay platforms for a demonstration of high bandwidth Naval Tactical Networking</p>		0.713 0	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
(NTN). The demonstration also included the integration of advanced relay technology with Mobile Ad hoc Network (MANET) controllers and HAIPE devices on Combined Enterprise Regional Information Exchange System (CENTRIXS). - Developed advanced routing, application and Information Assurance/Computer Network Defense (IA/CND) architectures and solutions for the coalition Naval Tactical Networking (NTN) environment that maximizes network efficiency using multiple, dissimilar bearers.			
<b>Title:</b> SUBNET RELAY	0.200	-	-
<b>Articles:</b>	0		
<b>Description:</b> The decrease in FY 2011 is due to this activity being realigned to "Advanced Relay Capabilities."			
<b>FY 2010 Accomplishments:</b> As a part of the refinement of Subnet Relay allied interoperability, developed interoperable wide-band Ultrahigh Frequency (UHF) solutions to enhance throughput and progress the standardization of Subnet Relay into a North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG). Exploited venues of opportunity to evaluate and validate developed portions of Wide-Band Subnet Relay configurations through testing, trials and demonstrations.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.913	0.853	0.792

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

**D. Acquisition Strategy**  
Allied/Coalition Interoperability and Information Dominance (ACIID) is a non-acquisition program that promotes US Navy interoperability with allied and coalition forces to achieve the Chief of Naval Operations (CNO) vision by facilitating maritime interoperability in both processes and communications systems, including emerging capabilities, to counter growing high-end asymmetric threats, and is a key enabler of the force multiplying benefits achieved through coalition cooperation among the Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO) and other partner nations.

**E. Performance Metrics**  
Advanced Relay Capabilities: In FY11 and FY12, the ACIID program will employ laboratory testing and at-sea demonstrations to assess specific technologies, operational concepts, and integrated Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) solutions pertaining to Coalition Naval Tactical Networking (CNTN), Service Oriented Architectures (SOA), and Maritime Domain Awareness (MDA). These assessments will report on identified capability gaps, link capability gaps to technology/DOTMLPF gaps, identify technologies and DOTMLPF solutions considered ready for deployment and transition to a program of record to enhance Fleet war fighting capability and enhance allied and coalition interoperability.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 0798: <i>Allied/Coalition Interoperability and Information Dominance (ACIID)</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Relay Capabilities	Various	Various:Various	12.129	-		-		-		-	0.000	12.129	
Advanced Relay Capabilities	WR	SPAWAR:San Diego	-	0.853	Nov 2010	0.792	Jan 2012	-		0.792	Continuing	Continuing	Continuing
Interoperability Requirements	Various	Various:Various	3.266	-		-		-		-	0.000	3.266	
T & E Tools Development	Various	Various:Various	0.429	-		-		-		-	0.000	0.429	
Systems Int. & Interop. Testing (LBTN)	Various	Various:Various	3.862	-		-		-		-	0.000	3.862	
Interoperability Validation	Various	Various:Various	2.748	-		-		-		-	0.000	2.748	
Joint Interoperability	Various	Various:Various	1.174	-		-		-		-	0.000	1.174	
Testing OTH-T Systems	Various	Various:Various	3.069	-		-		-		-	0.000	3.069	
<b>Subtotal</b>			26.677	0.853		0.792		-		0.792			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various:Various	1.468	-		-		-		-	0.000	1.468	
ACQ Workforce Fund	Various	Various:Various	0.009	-		-		-		-	0.000	0.009	
<b>Subtotal</b>			1.477	-		-		-		-	0.000	1.477	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		28.154	0.853	0.792	-	0.792		

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy								<b>DATE:</b> February 2011			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>				<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2144: <i>Space &amp; Elec Warfare Engineering</i>	10.761	10.059	9.264	-	9.264	9.114	8.716	8.768	8.591	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

OPNAVINST 3050.23 defines the policy to fuse validated and approved Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures and interoperability requirements with joint requirements, milestones and program decisions. C4ISR integrated architectures are the underpinnings for all C4ISR mission areas and capabilities and, as such, requirements and acquisition processes have been reengineered to use these Integrated Architectures for decisional purposes and strategic planning. Furthermore, Office of the Secretary of Defense (OSD) has defined key programs/efforts Global Information Grid (GIG) Baseline Extension (BE), Joint Tactical Radio System (JTRS), Network Centric Enterprise Services (NCES), Information Assurance (IA) and standards that will drive and change the Navy's C4ISR integrated architectures and associated business processes for requirements, budgets and acquisition. To that end, the Space and Electronic Warfare (SEW) provides two main functions: 1) Development of C4ISR integrated architecture products and 2) Supporting C4ISR systems engineering processes and standards. The integrated architecture products are used to support the Navy's C4ISR budget process by providing the critical core architecture and enabling capabilities to the war fighter. The C4ISR systems engineering processes and standards provide the construct for distributed Command and Control (C2) interoperability requirements analyses to identify capability shortfalls/gaps and for systems engineering to compare/test alternatives in a joint end-to-end environment while identifying associated Navy wide C4ISR implications. Processes include developing and applying criteria for use in Systems Engineering Technical Reviews (SETR) and providing technical input to governance bodies. This includes Human Systems Integration (HSI) to provide a mission-centered orientation to ensure effective operational employment of fielded capability. As joint concepts and OSD driving efforts/programs are matured/defined the Navy's C4ISR integrated architectures are refined and the supporting C4ISR systems engineering processes and standards work to engineer and enact C4ISR implementations Navy wide across all C4ISR mission areas.

Products provided:

- 1) C4ISR integrated architectures
  - Integrated Architectures and Standards - Architecture Views (Operational Views, Service Views, Technical Views, System Views)
  - Migration roadmaps to the target architectures
  - Architecture technical authority, studies, interpretation assistance, and white papers
- 2) Supporting C4ISR systems engineering processes
  - Distributed C2 Interoperability Requirement Analysis - Gaps Analysis, Overlap Analysis, System Priority Lists, C4ISR Metrics and Models, Analysis of Alternatives, Requirements Database, Assessment Repository, Resource Implications Studies, Baseline Performance Models, Mission Task Analysis, HSI assessments.
  - End-to-End Systems Engineering and Integrated Design - Operational feasibility studies, technical feasibility studies, technical roadmap engineering validations, Architectures and Assessment traceability matrices.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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- Joint and Coalition interoperability trials - Joint End-to-End prototyping trials, and joint/coalition interoperability demonstrations, interoperability assessments and metrics, and interoperability studies via the Coalition Warrior Interoperability Demonstration (CWID). United States Navy (USN) provides funding to the general CWID operating budget and participates by operating a USN demonstration site.  
3) Compliance and alignment reports with Navy Enterprise Architecture/Data Strategy and ASN RDA system engineering policies generated during systems engineering technical reviews (SETRs).

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> C4ISR SYSTEMS ENGINEERING</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2010 Accomplishments:</b> - Navy C4ISR Transformation/Strategic Planning within Navy/Joint/Department of Defense (DoD) Framework: Assessed existing and emerging capabilities; developed and evaluated Navy-wide policies, plans, requirements, and compliance; developed integration and investment strategies; and accelerated innovation, testing, assessment and fielding of material and non-material solutions for enhanced operational capability, joint/allied/coalition interoperability and application/enforcement of enterprise requirements/architectures/standards toward greater Net-Centric Operations/Warfare (NCO/W) capability. - Implemented and validated FORCEnet requirements: Performed Systems Engineering Technical Reviews (SETR) utilizing validated assessment tools, system engineering methodologies and Compliance Action Lists to ensure standard engineering processes (e.g., Information Assurance (IA), data strategy, architecture, modeling, Service Oriented Architecture development (SOA)) are developed and utilized to ensure FORCEnet compliance.</p> <p><b>FY 2011 Plans:</b> - Navy C4ISR Transformation/Strategic Planning within Navy/Joint/DoD Framework: Assess existing and emerging capabilities; develop and evaluate Navy-wide policies, plans, requirements, and compliance; develop integration and investment strategies; and accelerate innovation, testing, assessment and fielding of material and non-material solutions for enhanced operational capability, joint/allied/coalition interoperability and application/enforcement of enterprise requirements/architectures/standards toward greater NCO/W capability. - Implement and validate interoperability requirements: Perform SETR utilizing validated assessment tools, system engineering methodologies and Compliance Action Lists to ensure standard engineering processes (e.g., IA, data strategy, architecture, modeling, SOA development) are being developed and utilized to ensure interoperability compliance to statutory and regulatory directives and guidance.</p> <p><b>FY 2012 Plans:</b> - Navy C4ISR Transformation/Strategic Planning within Navy/Joint/DoD Framework: Assess existing and emerging capabilities; develop and evaluate Navy-wide policies, plans, requirements, and compliance; develop integration and investment strategies; and accelerate innovation, testing, assessment and fielding of material and non-material solutions for enhanced operational</p>	5.084 0	4.400 0	3.339 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>		<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				
				<b>FY 2010</b>
				<b>FY 2011</b>
				<b>FY 2012</b>
<p>capability, joint/allied/coalition interoperability and application/enforcement of enterprise requirements/architectures/standards toward greater NCO/W capability.</p> <p>- Implement and validate interoperability requirements: Perform SETR reviews utilizing validated assessment tools, system engineering methodologies and Compliance Action Lists to ensure standard engineering processes (e.g., IA, data strategy, architecture, modeling, SOA development) are being developed and utilized to ensure interoperability compliance to statutory and regulatory directives and guidance.</p>				
<b>Title:</b> COALITION WARRIOR INTEROPERABILITY DEMONSTRATION (CWID)				
				1.290
				1.700
				1.535
				0
				0
				0
<b>Articles:</b>				
<b>FY 2010 Accomplishments:</b>				
<p>Focused exclusively on joint capability gaps. As directed by the Coalition Warrior Interoperability Demonstration (CWID) Joint Management Office (JMO), funding was provided to the various joint organizations for execution of the joint portions of the CWID effort.</p> <p>The Navy site evaluated known Navy capability gaps and performed demonstration management, planning, installation/de-installation, security certification and accreditation, infrastructure (Networks, Crypto, laboratories, etc.), data collection and analysis, final report, and documentation.</p>				
<b>FY 2011 Plans:</b>				
<p>Demonstrate cutting-edge industry and government technologies and transition them to the end-user, including Non-Governmental Organizations (NGOs), coalition partners, and the joint services. Provide interoperability between existing and cutting-edge Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems. End-users will benefit from specific C4ISR information, not previously possessed in its pre-fused and uncorrelated state, but nonetheless required to complete their various missions. This newly-interoperable fused information will be critical in supporting tactical and strategic decision making and operational execution, directly impacting the outcome of ongoing global conflicts. Integrate directly with Program Executive Office (PEO) C4I and the combatant commanders at the Technical Director, Acquisition Program Manager, and Science Advisor levels, and the State and Federal First Responder Agencies at all levels. Commence with technology selection, experimental objective design, and experiment execution to influence and direct design efforts, focused on satisfying war fighter capability gaps. Year-round connectivity will be maintained with end-users, vetting capability requirements and ongoing technology efforts relevant to each organization. Experiment results will be directly integrated into developmental design and engineering efforts of individual technologies to accelerate the delivery of needed capability based on Joint Urgent Operational Need Statements (JUONs). Utilize operationally-relevant classified laboratory environments for joint</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
and coalition war fighter technology experiments, while real-world field environments will be utilized for technologies related to Humanitarian Assistance Disaster Relief, Homeland Security, and Homeland Defense.  <b>FY 2012 Plans:</b> Continue to demonstrate cutting-edge industry and government technologies and transition them to the end-user, including NGOs, coalition partners, and the joint services. Continue to provide interoperability between existing and cutting-edge C4ISR systems. Continue to integrate directly with PEO C4I and the combatant commanders at the Technical Director, Acquisition Program Manager, and Science Advisor levels, and the State and Federal First Responder Agencies at all levels. Continue with technology selection, experimental objective design, and experiment execution to influence and direct design efforts, to satisfy some war fighter capability gaps. Year-round connectivity will be maintained with end-users, vetting capability requirements and ongoing technology efforts relevant to each organization. Experiment results will be directly integrated into developmental design and engineering efforts of individual technologies to accelerate the delivery of needed capability based on JUONs. Utilize operationally-relevant classified laboratory environments for joint/ coalition war fighter technology experiments, while real-world field environments will be utilized for technologies related to Humanitarian Assistance Disaster Relief, Homeland Security, and Homeland Defense.				
<b>Title:</b> SYSTEMS ENGINEERING AND INTEGRATION REVITALIZATION  <b>FY 2010 Accomplishments:</b> - Certified competency standards for systems engineering qualification. - Delivered an assessment of systems engineering capability and recommend improvements. - Increased access to systems engineering training resources.  <b>FY 2011 Plans:</b> - Implement system engineering capability recommendations. - Provide increased access to systems engineering training resources.  <b>FY 2012 Plans:</b> - Implement system engineering capability recommendations. - Provide increased access to systems engineering training resources.		<b>Articles:</b> 1.229 0	1.108 0	1.229 0
<b>Title:</b> SYSTEMS ENGINEERING STANDARDS AND PROCESSES  <b>FY 2010 Accomplishments:</b> - Developed processes, model, and collected data to link probability of program success to systems engineering performance.		<b>Articles:</b> 3.158 0	2.851 0	3.161 0



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> <li>- Improved process for using modeling and simulation in Systems Engineering Technical Review (SETR).</li> <li>- Improved linkage between requirements analysis and enterprise architecture products.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Define the interfaces between program office systems engineering and enterprise systems engineering and optimize the total value of systems engineering in product delivery.</li> <li>- Develop processes to inject systems engineering discipline into the acquisition cycle earlier.</li> <li>- Incorporate lessons learned from recent and emerging program issues.</li> </ul> <p><b><i>FY 2012 Plans:</i></b></p> <p>Continue to define and implement technical authority for the interfaces between program office systems engineering and enterprise systems engineering and optimize the total value of systems engineering in product delivery.</p> <ul style="list-style-type: none"> <li>- Continue to develop processes to inject systems engineering discipline into the acquisition cycle earlier.</li> <li>- Continue to incorporate lessons learned from recent and emerging program issues.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	10.761	10.059	9.264

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

N/A

**D. Acquisition Strategy**

Space and Electronic Warfare (SEW) Engineering is a non-acquisition program that develops, tests, implements technical authority, and validates naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR); provides integrated architecture products and supports C4ISR systems engineering processes and standards.

**E. Performance Metrics**

In FY11 and FY12, the SEW engineering program will employ rigorous and consistent system engineering planning practices to develop architecture-based, model-validated solutions, plans, and recommendations for enterprise-wide network reconciliation, common platform networks, and standardized operation center configuration.

Coalition Warrior Interoperability Demonstration (CWID) Performance Metrics: Three key metrics: (1) Interoperability and compliance with Naval, joint, coalition and other non-governmental organization (NGO) architectures, systems and equipment; (2) Compliance with Defense Information Services Agency (DISA), National Security Agency (NSA), and other joint and coalition information assurance and security standards; and (3) war fighter utility assessment across the joint and coalition spectrum. Specific metrics validate performance of individual technologies participating in CWID.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	Various:Various	4.554	-		-		-		-	0.000	4.554	
SEW/C4I Technology Integration	Various	Various:Various	12.985	-		-		-		-	0.000	12.985	
MDA Prototype SE Support	Various	Various:Various	17.376	-		-		-		-	0.000	17.376	
Systems Engineering & Integration Revitalization	Various	Various:Various	2.174	-		-		-		-	0.000	2.174	
Systems Engineering & Integration Revitalization	C/CPFF	Unknown:Unknown	-	-		0.751	Feb 2012	-		0.751	Continuing	Continuing	Continuing
Systems Engineering & Integration Revitalization	C/CPFF	METRON:Reston, VA	-	0.316	Dec 2010	-		-		-	0.000	0.316	
Systems Engineering & Integration Revitalization	C/CPFF	SAIC:San Diego, CA	-	0.316	Dec 2010	-		-		-	0.000	0.316	
Systems Engineering & Integration Revitalization	WR	SSC LANT:Charleston, NC	-	0.133	Jan 2011	0.133	Feb 2012	-		0.133	Continuing	Continuing	Continuing
Systems Engineering & Integration Revitalization	WR	SSC PAC:San Diego, CA	-	0.343	Dec 2010	0.345	Feb 2012	-		0.345	Continuing	Continuing	Continuing
Systems engineering Standards & Processes	Various	Various:Various	5.588	-		-		-		-	0.000	5.588	
Systems engineering Standards & Processes	C/CPFF	Unknown:Unknown	-	-		1.932	Feb 2012	-		1.932	Continuing	Continuing	Continuing
Systems engineering Standards & Processes	C/CPFF	METRON:Reston, VA	-	0.813	Dec 2010	-		-		-	0.000	0.813	
Systems engineering Standards & Processes	C/CPFF	SAIC:San Diego, CA	-	0.812	Dec 2010	-		-		-	0.000	0.812	
Systems engineering Standards & Processes	WR	SSC LANT:Charleston, NC	-	0.342	Jan 2011	0.343	Feb 2012	-		0.343	Continuing	Continuing	Continuing
Systems engineering Standards & Processes	WR	SSC PAC:San Diego, CA	-	0.884	Dec 2010	0.886	Feb 2012	-		0.886	Continuing	Continuing	Continuing
Systems A&E and Validation	Various	Various:Various	13.188	-		-		-		-	0.000	13.188	
Distributed C2 Interoperability Requirement analysis	Various	Various:Various	16.583	-		-		-		-	0.000	16.583	
	Various	Various:Various	14.268	-		-		-		-	0.000	14.268	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
C4ISR Architecture and Standards													
End-to-End System Engineering and Integrated Design	Various	Various:Various	10.994	-		-		-		-	0.000	10.994	
Info. Repository/Naval Architecture	Various	Various:Various	4.000	-		-		-		-	0.000	4.000	
C4ISR Systems Engineering	Various	Various:Various	5.157	-		-		-		-	0.000	5.157	
C4ISR Systems Engineering	C/CPFF	Unknown:Unknown	-	2.200	Feb 2011	1.766	Feb 2012	-		1.766	Continuing	Continuing	Continuing
C4ISR Systems Engineering	WR	SSC LANT:Charleston, NC	-	0.440	Feb 2011	0.314	Feb 2012	-		0.314	Continuing	Continuing	Continuing
C4ISR Systems Engineering	WR	SSC PAC:San Diego, CA	-	1.188	Feb 2011	0.849	Feb 2012	-		0.849	Continuing	Continuing	Continuing
C4ISR Systems Engineering	WR	NAVAIR:Patuxent River, MD	-	0.088	Feb 2011	0.063	Feb 2012	-		0.063	Continuing	Continuing	Continuing
C4ISR Systems Engineering	MIPR	CECOM:Fort Monmouth, NJ	-	0.264	Feb 2011	0.189	Feb 2012	-		0.189	Continuing	Continuing	Continuing
C4ISR Systems Engineering	MIPR	AF:Hill AFB, UT	-	0.220	Feb 2011	0.158	Feb 2012	-		0.158	Continuing	Continuing	Continuing
<b>Subtotal</b>			106.867	8.359		7.729		-		7.729			

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
SEW Eng/CWID	Various	Various:Various	30.171	-		-		-		-	0.000	30.171	
SEW Eng/CWID	MIPR	Defense Information Systems Agency:Arlington, VA	-	0.107	Apr 2011	0.067	Apr 2012	-		0.067	Continuing	Continuing	Continuing
SEW Eng/CWID	WR	Joint Interoperability Test Command:Fort Huachuca, AZ	-	0.720	Mar 2011	0.595	Mar 2012	-		0.595	Continuing	Continuing	Continuing

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEW Eng/CWID	WR	SSC Pacific:San Diego, CA	-	0.758	Dec 2010	0.758	Dec 2011	-		0.758	Continuing	Continuing	Continuing
SEW Eng/CWID	MIPR	US Northern Command:Peterson AFB, CO	-	0.115	Dec 2010	0.115	Dec 2011	-		0.115	Continuing	Continuing	Continuing
SEW Eng/JRAE	Various	Various:Various	15.978	-		-		-		-	0.000	15.978	
<b>Subtotal</b>			46.149	1.700		1.535		-		1.535			

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ACQ Workforce Fund	Various	Various:Various	0.071	-		-		-		-	0.000	0.071	
<b>Subtotal</b>			0.071	-		-		-		-	0.000	0.071	

			Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			153.087	10.059		9.264		-		9.264			

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>
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Fiscal Year	2010				2011				2012				2013				2014				2015				2016							
	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				
CWID: Schedule as directed by the Joint Management Office (JMO) during execution year.																																



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2144: <i>Space &amp; Elec Warfare Engineering</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2144</b>				
CWID: Schedule as directed by the Joint Management Office (JMO) during execution year.	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
<i>2357: Maritime Battle Center</i>	27.037	23.881	8.877	-	8.877	8.812	8.958	9.059	9.193	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

Funding Sea Trial funding has been moved to a new project - 3319 Fleet Experimentation. The funding decrease in FY 2012 is due to realignment of funds for higher priority requirements.

**A. Mission Description and Budget Item Justification**

Funds the development of new or improved war fighting capabilities through the Concept Generation and Concept Development (CG/CD) program. The priorities for the CG/CD program are to explore near-/far-term technological and non-technological solutions to war fighting gaps across all naval warfare areas. The CG/CD experimentation efforts include planning, systems engineering and integration, execution, data collection, analysis, and assessment requirements for a wide range of experiment venues, such as workshops, seminars, wargames, limited objective experiments, limited technical experiments, and live force events. Where appropriate, CG/CD experimentation will be conducted in a joint, or coalition environment.

Also supports the fleet's experimentation program (Sea Trial) by providing planning, systems engineering and integration, execution, data collection, and analysis support to the Sea Trial Operational Agents where appropriate and as available. This support is focused on experimentation contained in the annual Sea Trial Execution Plan.

This program historically does not meet established execution benchmarks. It differs from other Research, Development, Test and Evaluation (RDT&E) programs because it relies upon fleet participation, and thus is scheduled around fleet or staff availability. Because that availability frequently occurs during the spring and summer operational schedules, the overall RDT&E obligation/expenditure rates do not align with OSD practice. As a result, this project's obligation rates do not begin to approach benchmark until the program nears the fiscal year's end while its expenditure rates generally do not approach benchmark until midway through the second year of its appropriation.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> FBE ANALYSIS AND CORE SUPPORT	27.037	23.881	8.877
<b>Articles:</b>	0	0	0
<b>Description:</b> Because of the synergistic relationship between Maritime Battle Center experimentation efforts and the fleet's Sea Trial experimentation efforts, funding for both endeavors have been combined under one project, the Maritime Battle Center. The Sea Trial aspect of this project's mission is driven by annual priorities. The priorities are further prioritized and approved by the Sea Trial Executive Steering Group (STESG).			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
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- FY 2010 Accomplishments:***
- Continued participation in JFCOM experimentation continuum.
  - Continued Limited Objective Experiments.
  - Continued CONOPS Development Experiments.
  - Continued the Sonar/Radar Data Comparison experiment.
  - Continued the Millimeter Wave Chaff experiment.
  - Continued the Surface Action Group Modeling experiment.
  - Continued the Harpoon Seeker Modeling in an Electronic Attack environment experiment.
  - Continued the Fast Attack Craft/Fast Inshore Attack Craft experiment.
  - Continued the multi-year series of Littoral Force Protection experiments.
  - Continued the final spiral of the multi-year series of Tactical Tomahawk 3rd Party Targeting experiments.
  - Continued the multi-year series of Surface Ship Periscope Detection experiments.
  - Continued the multi-year series of Submarine Unmanned Aerial System experiments.
  - Continued the multi-year series of Submarine Communications at Speed and Depth experiments.
  - Continued the multi-year series of Mine Countermeasures in Support of Homeland Defense experiments.
  - Continued the multi-year series of Littoral Combat Ship Mine Warfare Mission Modules experiments.
  - Continued the multi-year series of SPIKE experiments.
  - Continued the Sonar Active Target Evaluation experiment.
  - Continued the multi-year series of Project Guillotine experiments.
  - Continued the multi-year series of Submarine/Unmanned Underwater Vehicle Communications experiments.
  - Initiated and executed Sea Trial Experiments, War Games, and Seminars.
  - Initiated and completed the ASW Employment of Emerging Technology experiment.
  - Initiated and completed the FY10 spiral of the multi-year series of Computer Network Defense experiments.
  - Initiated and completed the FY10 spiral of the multi-year series of Electronic Warfare Improvement experiments.
  - Initiated and completed the FY10 spiral of the multi-year series of Persistent ISR (Intelligence, Surveillance and Reconnaissance) experiments.
  - Initiated and completed the FY10 spiral of the multi-year series of Globally Networked Maritime Operations Center experiments.
  - Initiated and completed the Palantir experiment.
  - Initiated and completed the FY10 spiral of the multi-year series of Operational Level Command and Control experiments.
  - Initiated and completed the CONOPS for Employment of Unmanned Surface Vessels for Force Protection experiment.
  - Initiated and completed the FY10 spiral of the multi-year series of Maritime Domain Awareness experiments.
  - Initiated and completed the FY10 spiral of the multi-year series of Long Range Anti-Ship Missile Weapon experiments.
  - Initiated and completed the Tactical Tomahawk/Network Enabled Weapon experiment.

<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> <li>- Initiated and completed the FY10 spiral of the multi-year series of Naval Oceanography Mine Warfare Center Employment of Emerging Technology experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Fusion Correlation experiments.</li> <li>- Initiated and completed the ASW Distributed Force experiment.</li> <li>- Initiated and completed the Tactical Tomahawk Ship to Objective Maneuver Coordination experiment.</li> <li>- Initiated and completed the JFMCC-MEB Command and Control experiment.</li> <li>- Initiated and completed the Non-Lethal Weapons for Expeditionary Maritime Forces experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Coalition Information Sharing experiments.</li> <li>- Initiated and completed the Compact Low Frequency Active Off-Board Active Source Expendable experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Electric E-Fields experiments.</li> <li>- Initiated and completed the FY10 spiral of the Unmanned Surface Vehicle Decoys experiments.</li> <li>- Initiated and completed the ASW Non-Traditional Sensor experiment.</li> <li>- Initiated and completed the Maritime Force Application/Fires Computer Information Environment experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Navy Laser Weapons Systems experiments.</li> <li>- Initiated and completed the Carrier Strike Group/Surface Action Group Takedown experiment.</li> <li>- Initiated and completed the Seabasing Wargame.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Data Throughput experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Tactical Communications experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Offensive Information Operations experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Network Management experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Real-Time Collaboration experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Submarine Launched Small Tactical Unmanned Aerial Systems experiments.</li> <li>- Initiated and completed the Lethal Weapons for Expeditionary Maritime Forces experiments.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Satellite Communications experiments.</li> <li>- Initiated and completed the APS-145 Counter Deceptive Electronic Attack experiment.</li> <li>- Initiated and completed the Sealift 10 Navy Logistics Cell experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Information Assurance experiments.</li> <li>- Initiated and completed the Logistics Common Operating Picture experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Naval Obscurant System experiments.</li> <li>- Initiated and completed the Over the Horizon Detection of Naval Radar experiment.</li> <li>- Initiated and completed the FY10 spiral of the multi-year series of Cross Domain Solutions experiments.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> <li>- Initiated and completed the Reconfigurable Autonomous Classification System experiment.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue all FY 2010 efforts less those noted as completed above.</li> <li>- Initiate and execute Sea Trial Experiments, War Games, and Seminars based on the Execution Plan 11, currently being developed.</li> <li>- Initiate and execute experiments in support of the CNO-directed Concept Generation and Concept Development effort.</li> </ul> <p><b><i>FY 2012 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue all FY 2011 efforts less those noted as completed above.</li> <li>- Initiate and execute Sea Trial Experiments, War Games, and Seminars based on the Execution Plan 12.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	27.037	23.881	8.877

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

N/A

**D. Acquisition Strategy**

There is no acquisition strategy - this is not an acquisition program nor is materiel purchased with this funding. This funding is used to buy people to generate/develop/validate concepts, or to build and analyze the results of experiments focused on improved processes and tactics/techniques/procedures to mitigate identified war fighting gaps. The majority of this funding buys a core group of contractors who provide experiment design, execution and analysis support while the remainder is used to buy specific skill sets that are not part of the core group, and also cover some of the engineering and integration costs associated with certain experiments.

**E. Performance Metrics**

Maritime Battle Center:

- Refine concepts and identify key performance levels necessary for implementation.
- Demonstrate feasibility and discriminate among competing concepts and implementation alternatives.
- Understand potential military effectiveness and risk.
- Evaluate how much of the new capability and attendant force structure is needed.
- Learn how to operate the new force and combine it with the legacy force.
- Develop recommended Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) changes.
- Develop fleet war fighting requirements for submission to the OPNAV Navy Capabilities Development Process (NCDP) to inform Navy acquisition decisions.
- Integrate emergent concepts and technologies, leading to rapid introduction of needed war fighting capabilities in the fleet.
- Rapidly mature Sea Shield, Sea Strike, Sea Basing, and FORCEnet concepts, technologies, and doctrine.
- Focus on near, mid and long term war fighting challenges to realize increased war fighting effectiveness.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
System Test and Evaluation	MIPR	Defense Technical Information Center:Ft Belvoir VA	246.277	2.000	Nov 2010	-		-		-	0.000	248.277	2.000
System Test and Evaluation	C/FFP	NAVSEA:Washington DC	-	2.000	Dec 2010	-		-		-	0.000	2.000	2.000
System Test and Evaluation	C/FFP	SPAWAR:San Diego CA	-	2.000	Mar 2011	2.012	Jan 2012	-		2.012	Continuing	Continuing	Continuing
System Test and Evaluation	C/FFP	SPAWARSYSCEN Atlantic:Charleston SC	-	3.500	Mar 2011	2.500	Mar 2012	-		2.500	Continuing	Continuing	Continuing
System Test and Evaluation	C/FFP	SPAWARSYSCEN Pacific:San Diego CA	-	2.000	Mar 2011	-		-		-	0.000	2.000	2.000
System Test and Evaluation	C/FFP	Naval Underwater Warfare Center:Newport RI	-	1.000	Mar 2011	-		-		-	0.000	1.000	1.000
System Test and Evaluation	C/FFP	Naval Surface Warfare Center:CA, IN, MD, VA	-	1.500	Mar 2011	-		-		-	0.000	1.500	1.500
System Test and Evaluation	C/FFP	Naval Postgraduate School:Monterey CA	-	2.000	Mar 2011	-		-		-	0.000	2.000	2.000
System Test and Evaluation	C/FFP	Navy Warfare Development Command:Norfolk VA	-	3.882	Oct 2010	3.000	Jan 2012	-		3.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			246.277	19.882		7.512		-		7.512			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management	C/FFP	Navy Warfare Development Command:Norfolk VA	50.063	1.000	Oct 2010	1.365	Jan 2012	-		1.365	Continuing	Continuing	Continuing
Program Management	C/FFP	Naval Postgraduate School:Monterey CA	-	1.000	Nov 2010	-		-		-	0.000	1.000	1.000

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Experimentation Efforts</b>																												
Navy Continuous Training Environment																												
Distributed Netted Systems in the conduct of Anti-Submarine Warfare																												
Modeling and simulation of events and wargaming																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 2357: <i>Maritime Battle Center</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Experimentation Efforts</i></b>				
Navy Continuous Training Environment	1	2010	4	2016
Distributed Netted Systems in the conduct of Anti-Submarine Warfare	1	2010	4	2016
Modeling and simulation of events and wargaming	1	2010	4	2016

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3319: <i>Fleet Experimentation</i>	-	-	14.688	-	14.688	14.481	14.819	14.993	15.216	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**Note**

Since FY-06 the funding for Fleet Experimentation (Sea Trial) has been contained in Project 2357 - Maritime Battle Center. In FY-12 Project 2357 has been split with the funding for NWDC experimentation remaining in 2357 while Fleet Experimentation (Sea Trial) funding has been moved to this new project - 3319 Fleet Experimentation. The funding decrease in FY 2012 is due to realignment of funds for higher priority requirements.

**A. Mission Description and Budget Item Justification**

The mission of the Sea Trial (Fleet Experimentation) program is the development of new or improved war fighting capabilities. Sea Trial evaluates and validates emerging Navy concepts, concepts of operations (CONOPS), doctrine and technologies through focused experimentation, rigorous analysis, and assessment and is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) war fighting gaps. Sea Trial efforts are prioritized by the flag level Sea Trial Executive Steering Group (STESG), approved by Commander, U.S. Fleet Forces, and contained in the Sea Trial annual execution plan.

Sea Trial conducts experiments that examine both technological and non-technological solutions to war fighting gaps across all naval warfare areas. Sea Trial experiments run the gamut from workshops and seminars to fleet experiments, and involve all facets of experimentation including planning, systems engineering and integration, execution, data collection, analysis, and assessment. While Navy-centric, Sea Trial efforts include joint and coalition partners when appropriate.

This program historically does not meet established execution benchmarks. Sea Trial experimentation differs from other Research, Development, Test and Evaluation (RDT&E) programs because it is based upon Fleet operational availability vice independently scheduled through war fighting labs. Because Fleet experimentation frequently must occur during the spring and summer operational schedules, the overall RDT&E obligation/expenditure rates do not align with OSD practice. As a result, Sea Trial's obligation rates do not begin to approach benchmark until the program nears the fiscal year's end while its expenditure rates generally do not approach benchmark until midway through the second year of its appropriation.

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

	FY 2010	FY 2011	FY 2012
<b>Title:</b> Fleet Experimentation	-	-	14.688
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> - Initiate and complete experiments in support of the CNO-directed Concept Generation and Concept Development program. - Initiate and complete experiments tasked by U.S. Fleet Forces in support of Fleet Experimentation.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	14.688

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>

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

N/A

**D. Acquisition Strategy**

There is no acquisition strategy - this is not an acquisition program nor is materiel purchased with this funding. This funding is used for between 30 and 40 experimental initiatives annually, focused on addressing fleet identified capability gaps, and primarily buys the people to design and execute the experiments and analyze the results.

**E. Performance Metrics**

Fleet Experimentation:

- Refine concepts and identify key performance levels necessary for implementation.
- Demonstrate feasibility and discriminate among competing concepts and implementation alternatives.
- Understand potential military effectiveness and risk.
- Evaluate how much of the new capability and attendant force structure is needed.
- Learn how to operate the new force and combine it with the legacy force.
- Develop recommended Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) changes.
- Develop fleet war fighting requirements for submission to the OPNAV Navy Capabilities Development Process (NCDP) to inform Navy acquisition decisions.
- Integrate emergent concepts and technologies, leading to rapid introduction of needed war fighting capabilities in the fleet.
- Rapidly mature Sea Shield, Sea Strike, Sea Basing, and FORCEnet concepts, technologies, and doctrine.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Test and Evaluation	MIPR	Defense Technical Information Center:Ft Belvoir VA	-	-		1.000	Jan 2012	-		1.000	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	NAVSEA:Washington DC	-	-		2.000	Jun 2012	-		2.000	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	SPAWAR:San Diego CA	-	-		1.838	Mar 2012	-		1.838	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	SPAWARSYSCEN Atlantic:Charleston SC	-	-		1.823	Mar 2012	-		1.823	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	SPAWARSYSCEN Pacific:San Diego CA	-	-		2.300	Mar 2012	-		2.300	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	Naval Underwater Warfare Center:Newport RI	-	-		0.500	Jan 2012	-		0.500	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	Naval Surface Warfare Center:CA, IN, MD, VA	-	-		1.000	Jun 2012	-		1.000	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	Naval Postgraduate School:Monterey CA	-	-		1.500	Jun 2012	-		1.500	Continuing	Continuing	Continuing
Systems Test and Evaluation	C/FFP	Navy Warfare Development Command:Norfolk VA	-	-		0.500	Mar 2012	-		0.500	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		12.461		-		12.461			

<b>Management Services (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Management	C/FFP	SPAWAR:San Diego CA	-	-		1.527	Jan 2012	-		1.527	Continuing	Continuing	Continuing
Program Management	C/FFP	Naval Postgraduate School:Monterey CA	-	-		0.700	Jun 2012	-		0.700	Continuing	Continuing	Continuing
<b>Subtotal</b>			-	-		2.227		-		2.227			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2012 Navy</b>							<b>DATE:</b> February 2011					
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>				<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>					
	<b>Total Prior Years Cost</b>		<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-		-		14.688		-		14.688			

Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>
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FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
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

<b>Sea Trials</b>																												
Trident Warrior and FORCEnet experiments																												
Trident Warrior lab based experiments																												
Laser Weapon System in a maritime environment																												
Anti-Submarine Employment of Emerging Technology experiments																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604707N: <i>SEW Architecture/Eng Support</i>	<b>PROJECT</b> 3319: <i>Fleet Experimentation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Sea Trials</b>				
Trident Warrior and FORCEnet experiments	1	2010	4	2016
Trident Warrior lab based experiments	1	2010	4	2016
Laser Weapon System in a maritime environment	1	2010	4	2016
Anti-Submarine Employment of Emerging Technology experiments	1	2010	4	2016

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0303354N: <i>ASW Systems Development - MIP</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	2.161	1.078	-	1.078	1.177	1.227	1.272	1.295	Continuing	Continuing
0490: <i>Airborne Acoustic Intelligence (AAI)</i>	-	2.161	1.078	-	1.078	1.177	1.227	1.272	1.295	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The mission of Airborne Acoustic Intelligence (AAI) (CNO Project K-0416) is to provide Sound Pressure Level (SPL) quality recordings of targets of interest and an associated new technology, rapid prototyping mechanism for the application of state-of-the-art collection sensors. The program will develop and rapidly deploy new technology concepts in hardware and software to effectively address emerging littoral threats and to improve the present Undersea Warfare capability in support of the preparation of the Battlespace and Sea Shield/Sea Trial Initiatives. AAI also provides a measurement analysis capability to reconstruct, analyze, and develop active and target strength measurement validation. The AAI data collection program provides passive and active acoustic and non-acoustic data essential for the design and development of environmental models, sensors, weapons, software algorithms, and tactical decision aids. AAI employs developmental and prototypical hardware installed in uniquely configured Anti Submarine Warfare aircraft to collect data of interest, and specially configured ground support facilities to conduct reconstruction and analysis of this data. AAI includes calibrated recording systems, advanced detection and tracking systems, special sensors, advanced processing systems and techniques and specially derived operational tactics.

Funding was moved in FY11 from PE 0603254N to this PE (0303354N) and is a Military Intelligence Program.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	2.161	1.172	-	1.172
Current President's Budget	-	2.161	1.078	-	1.078
Total Adjustments	-	-	-0.094	-	-0.094
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.070	-	-0.070
• Rate/Misc Adjustments	-	-	-0.024	-	-0.024

**Change Summary Explanation**

Technical: 0490. FY-11 thru FY-15 Active Target Strength development will be placed on hold due to decrease in funding.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	PE 0303354N: <i>ASW Systems Development - MIP</i>

Schedule: Due to funding decrease, Active Target Strength development placed on Hold and quantities decreased. P-3 Avionics Suite upgrades for Magnetic Anomaly Detector recording placed on Hold and quantities decreased.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303354N: <i>ASW Systems Development - MIP</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0490: <i>Airborne Acoustic Intelligence (AAI)</i>	-	2.161	1.078	-	1.078	1.177	1.227	1.272	1.295	Continuing	Continuing
Quantity of RDT&E Articles	0	1	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The mission of Airborne Acoustic Intelligence (AAI) (CNO Project K-0416) is to provide Sound Pressure Level (SPL) quality recordings of targets of interest and an associated new technology, rapid prototyping mechanism for the application of state-of-the-art collection sensors. The program will develop and rapidly deploy new technology concepts in hardware and software to effectively address emerging littoral threats and to improve the present Undersea Warfare capability in support of the preparation of the Battlespace and Sea Shield/Sea Trial Initiatives. AAI also provides a measurement analysis capability to reconstruct, analyze and develop active target strength measurement validation. The AAI data collection program provides passive and active acoustic and non-acoustic data essential for the design and development of environmental models, sensors, weapons, software algorithms, and tactical decision aids. AAI employs developmental and prototypical hardware installed in uniquely configured ASW aircraft to collect data of interest, and specially configured ground support facilities to conduct reconstruction and analysis of this data. AAI includes calibrated recording systems, advanced detection and tracking systems, special sensors, advanced processing systems and techniques and specially derived operational tactics. The one RDT&E article consists of a SPL collection suite.

Funding was moved in FY11 from PE 0603254N to this new PE (0303354N) and is considered a Military Intelligence Program.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Systems Engineering / Aircraft Mods Active Acoustic Program</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2011 Plans:</b> Engineering to support SPL Recording. Post mission processor upgrades for Calibrated Acoustic Intelligence (ACINT). P-8A aircraft calibration unit enhancements. Engineering development of Target Strength processing placed on Hold.</p> <p><b>FY 2012 Plans:</b> Engineering to support SPL Recording. Post mission processor upgrades for Calibrated ACINT. P-8A aircraft calibration unit enhancements. Engineering development of Target Strength processing placed on Hold.</p>	-	1.011 1	0.500 0
<p><b>Title:</b> Data Collection and Analysis</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>FY 2011 Plans:</b> Data collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of Measurement/Measuring and Signature Intelligence(MASINT)/Office of Naval Intelligence (ONI) threat assessment requirements.</p>	-	0.750 0	0.400 0

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303354N: <i>ASW Systems Development - MIP</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Reduction, Analysis and Fleet Rapid Feedback. Conduct airborne special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development.  <b>FY 2012 Plans:</b> Data collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of MASINT/ONI threat assessment requirements. Reduction, Analysis and Fleet Rapid Feedback. Conduct airborne special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development.			
<b>Title:</b> Active Measurement Validation  <b>FY 2011 Plans:</b> Active Measurement Validation of targets of interest. Provides the acoustic analysis of echo characterization (which includes: signal excess measurements, peak frequency, trend analysis and pulse duration measurements) and target strength.  <b>FY 2012 Plans:</b> Active Measurement Validation of targets of interest. Provides the acoustic analysis of echo characterization (which includes: signal excess measurements, peak frequency, trend analysis and pulse duration measurements) and target strength.	<b>Articles:</b> -	0.400 0	0.178 0
<b>Accomplishments/Planned Programs Subtotals</b>	-	2.161	1.078

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

N/A

**D. Acquisition Strategy**

Airborne Acoustic Intelligence (AAI) is a CNO Special Project. The included technology developments are primarily in-house with contractor participation through existing vehicles.

**E. Performance Metrics**

MIP Program.





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**Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303354N: <i>ASW Systems Development - MIP</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>
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Proj: 0490 Airborne Acoustic Intelligence (AAI)	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
<b>Systems Engineering</b>																												
P-3/P-8 Avionics Suite																												
<b>Sys Eng Tactical Acoustic Processor (TAPS)</b>																												
<b>Product Development</b>																												
<b>Deliveries</b>																												

TAPS Processor  
■

P3/P8 Avionics  
■

2012PB - 0303354N - 0490 P-3 Avionics Suite upgrades for Magnetic Anomaly Detector (MAD) recording placed on Hold & quantities decreased.  
The Tactical Acoustic Processor (TAPS) tech refresh accelerated to FY11 & quantity added.  
Due to funding decrease (Issue 50334, NGEN) Active Target Strength development placed on Hold & quantities decreased.

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**Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303354N: <i>ASW Systems Development - MIP</i>	<b>PROJECT</b> 0490: <i>Airborne Acoustic Intelligence (AAI)</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj: 0490 Airborne Acoustic Intelligence (AAI)</i></b>				
Systems Engineering: P-3/P-8 Avionics Suite: P-3/P-8 Avionics Suite	1	2011	4	2016
Sys Eng Tactical Acoustic Processor (TAPS): Sys Eng Tactical Acoustic Processor (TAPS)	1	2011	4	2016
Product Development: Data Collection and Analysis	1	2011	4	2016
Deliveries: TAPS Processor	3	2011	3	2011
Deliveries: P3/P8 Avionics	3	2013	3	2013

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	4.253	-	-	-	-	-	-	-	0.000	4.253
0770: <i>Adv Sub Supp Equip Prog</i>	-	4.253	-	-	-	-	-	-	-	0.000	4.253

**A. Mission Description and Budget Item Justification**

The Submarine Tactical Warfare Systems MIP program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP). The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D). In order to provide improved operational effectiveness, research and development, efforts are focused on Advanced Imaging Developments and Advanced Electronic Warfare Support (ES) Developments. A continuing need exists to improve these capabilities in view of the advancements in potential imaging counter detection, the need to support specialized missions and the increasingly dense and sophisticated electronic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Ongoing developments in 360 degree imaging systems technologies are supporting these needs.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	4.253	4.334	-	4.334
Current President's Budget	-	4.253	-	-	-
Total Adjustments	-	-	-4.334	-	-4.334
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-4.182	-	-4.182
• Rate/Misc Adjustments	-	-	-0.152	-	-0.152

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0770: <i>Adv Sub Supp Equip Prog</i>	-	4.253	-	-	-	-	-	-	-	0.000	4.253
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

A continuing need exists to improve Imaging and Electronic Warfare Support (ES) capabilities in view of the advancements in potential imaging counter detection and the increasingly dense electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ES and imaging to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection and Joint Strike. The program is divided into two project categories: Advanced Imaging Project Development and Advanced Electronic Warfare Support Project Development. Both of these categories will allow for the evaluation of the vulnerability of submarine masts, periscopes and sensors to visual, radar, and infrared detection and evaluation of state of the art technology to implement periscope/mast engineering improvements to reduce counter detection threats, the pursuit of technologies (such as 360 degree imaging systems) to develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies available from academia and other sources. Engineering demonstration models (EDMs) are developed, evaluated, and validated in the lab and through at-sea testing.

The Advanced Imaging Project Development Projects include the development of: 360 Degree Imaging - Far Term Advanced System, 360 Degree Imaging - Near Term System, 360 Degree Submarine Panoramic Infra-Red (SPIR) Imaging System, 360 Degree Affordable Modular Panoramic Periscope (AMPP), Advanced Head Window Water Shedding, Electro-Optic/Infrared Vulnerability Signature Reduction, Low Cost, Multi-Spectral Grade A Head Window and Mast Signature Reduction. The Advanced Electronic Warfare Support (ES) Development Projects include the development of: Distant ES Support and Remote Log-In, Rapid Reprogram Threat Library, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool, Integrated ES and ECS Radio Frequency Distribution Unit (RFDU) and Multi-function Modular Mast (MMM) Payloads.

All programs funded in this project are non-acquisition category programs. The test articles identified consist of critical components that will be fully developed during engineering development into Engineering Development Models (EDMs).

ASSEP Program was transferred from a Military Intelligence Program, Program Element (PE) 0303562N in Fiscal Year 2012 back to PE 0603562N.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> Advanced Electronic Warfare Support (ES) Project Development</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> 360 Degree Imaging (JPL) - Far Term Advanced System: Spiral 1 Testing &amp; Spiral 2 Development 360 Degree Submarine Panoramic Mid-wave Infra-Red (MWIR) Imaging System; Generate Performance Specification 360 Degree Affordable Modular Panoramic Periscope (AMPP) - Generate Performance Specifications</p>	-	3.086 0	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2010	FY 2011	FY 2012
Advanced Head Window Water Shedding - At Sea Test and BIO-Fouling Report Low Cost, Multi-Spectral Grade A Head Window Mast Signature Reduction - Thermal Studies  <b>FY 2011 Plans:</b> FY 2011 Plans/Accomplishments: Distant ES Support Remote Log-In: At-Sea Test and Transition to EW ES Vulnerability Tool: Lab Demonstration Rapid Reprogram Threat Library: At-Sea Test and Transition to EW			
<b>Title:</b> Advanced Electronic Warfare Support (ES) Project Development.  <b>FY 2011 Plans:</b> Capability Insertions (CI) Distant ES Support and Remote Log-In - At Sea Testing Specific Emitter Identification (SEI) Improvements - At Sea Testing ES Vulnerability Tool - Lab Testing	<b>Articles:</b>	-  1.167 0	-
<b>Accomplishments/Planned Programs Subtotals</b>	-	4.253	-

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

N/A

**D. Acquisition Strategy**

This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letters, Serial N77/3U629212, dated 04 Sep 03, CNO Ltr Ser N772/5U936037 dtd 13 JUN 2005, CNO Ltr Ser N776/4U786103 dtd 1 APR 2004, COMSUBLANT/ COMSUBPAC, Virginia Class SSN Operational Requirements Documentation objectives, ORD for Photonics (ORD #365-87-94) [dtd JUL 1994], Operational Requirements Document (ORD) for ES (ORD # 570-77-00) [dtd 20 DEC 2000], ORD for ISIS (ORD #663-77-05) [dtd MAR 2005. Project efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available from and other sources. Engineering Demonstration Models (EDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.

**E. Performance Metrics**

The RDD program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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<b>Product Development (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPHF	JPL:Pasadena, CA	-	1.947	Dec 2010	-		-		-	0.000	1.947	Continuing
Systems Engineering	WR	NUWC:Newport, RI	-	2.032	Dec 2010	-		-		-	0.000	2.032	Continuing
<b>Subtotal</b>			-	3.979		-		-		-	0.000	3.979	

<b>Support (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Technical Services	C/CPAF	AT&T GSI:Vienna, VA	-	0.240	Oct 2010	-		-		-	0.000	0.240	Continuing
<b>Subtotal</b>			-	0.240		-		-		-	0.000	0.240	

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	NAVSEA:WNY	-	0.034	Oct 2010	-		-		-	0.000	0.034	Continuing
<b>Subtotal</b>			-	0.034		-		-		-	0.000	0.034	

			Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	4.253	-	-	-	0.000	4.253	

**Remarks**



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Navy</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification: PB 2012 Navy</b>			
<b>APPROPRIATION/BUDGET ACTIVITY</b> APPN: 1319 / BA: 04	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>	
<b>Fiscal Year</b>	2011	2012	2013
<b>Quarter</b>	1 2 3 4	1 2 3 4	1 2 3 4
<b>ASSEP</b>			
<b>Imaging Advanced Development</b>			
<b>360 Degree Imaging (ONR 360 MWIR) [Mid Term]</b>	△ Perf Spec Lab Demo	Transition to PE 0603652N	
<b>360 Degree Imaging (JPL Version) [Long Term]</b>	Lab Demo Spiral 1 △	Spiral 2 Study Transition to PE 0603652N	
<b>360 Degree Imaging (ONR AMPP) [Long Term]</b>		Perf Spec Transition to PE 0603652N	
<b>Head Window Water Shedding</b>	△ At-sea Testing	Transition to Imaging	Transition to PE 0603652N
<b>Low Cost, Multi-Spectral, Grade A Head Window (Spinel)</b>	△ At-sea Testing	Transition to Imaging	Transition to PE 0603652N
<b>Electro-Optic/Infrared Vulnerability Signature Reduction</b>		Special Model Studies	Transition to PE 0603652N
<b>Electronic Warfare Advanced Development</b>			
<b>Capability Insertions (CIs) (1-Distant Support/Remote Login, 2-Rapid Reprogramming of Threat Libraries, 3-ES Vulnerability Tool/Tactical Decision Aid, 4-Integrated ES/ECS RFDU, 5-Specific Emitter Identification Improvements, 6-MMM Payload, 7-LP DF)</b>	At-Sea Test-1 △	Transition to EW-1 △	Transition to PE 0603652N

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0770</b>				
360 Degree Imaging (ONR) - MWIR - (Performance Specification)	1	2011	1	2011
360 Degree Imaging (ONR) - MWIR - (Lab Demo)	3	2011	3	2011
360 Degree Imaging (JPL) - High Resolution (Spiral 1 Lab Demo)	2	2011	2	2011
360 Degree Imaging (JPL) - High Resolution (Spiral 2 Lab Demo)	2	2011	2	2011
360 Degree Imaging (ONR) - AMPP- (Performance Specification)	3	2011	3	2011
Head Window Water Shedding (At-Sea Testing)	2	2011	2	2011
Head Window Water Shedding (Transition to Imaging)	1	2011	1	2011
Low Cost, Multi-Spectral, Grade A, Head Window - (At-Sea Testing)	1	2011	1	2011
Low Cost, Multi-Spectral, Grade A, Head Window - (Transition to Imaging)	4	2011	4	2011
Electro-Optic/Infrared Vulnerability Signature Reduction (Special Wake Model Special)	3	2011	3	2011
Capability Insertions (CI) - (At-Sea Test - 1) Remote Log-In Operation	3	2011	3	2011
Capability Insertions (CI) - (Transistion to EW - 1 Remote Log-in/Operation)	4	2011	4	2011

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0304270N: <i>Electronic Warfare Development - MIP</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	0.663	0.625	-	0.625	0.645	0.660	0.673	0.684	Continuing	Continuing
2260: <i>Specific Emitter ID</i>	-	0.663	0.625	-	0.625	0.645	0.660	0.673	0.684	Continuing	Continuing

**Note**

New MIP PE formerly funded in 0604270N.

**A. Mission Description and Budget Item Justification**

The efforts described in this Program Element (PE) are based on investment directions as defined in the Naval S&T Strategic Plan approved by the S&T Corporate Board (Feb 2009).

This project supports systems development and collection of Specific Emitter Identification (SEI) information from National Technical Means (NTM) to track commercial ships over 200 gross registered tons world-wide. Research and development will cover improvements and enhancements to Electronic Intelligence technology. This will include improved/next generation SEI technology for miniaturization and automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Propagation in a multi-path signal environment will also be assessed. All work on this project will be undertaken in pursuit of goals stated by the Office of Naval Intelligence and the National Security Agency in support of the Worldwide Ship Tracking Program.

This effort was previously funded in PE 0604270N and is moved to this new PE 0304270N for FY11 onward. This PE is a Military Intelligence Program.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	0.663	0.666	-	0.666
Current President's Budget	-	0.663	0.625	-	0.625
Total Adjustments	-	-	-0.041	-	-0.041
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.040	-	-0.040
• Rate/Misc Adjustments	-	-	-0.001	-	-0.001

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Navy

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

1319: *Research, Development, Test & Evaluation, Navy*  
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

**R-1 ITEM NOMENCLATURE**

PE 0304270N: *Electronic Warfare Development - MIP*

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Navy **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0304270N: <i>Electronic Warfare Development</i> - MIP	<b>PROJECT</b> 2260: <i>Specific Emitter ID</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2260: <i>Specific Emitter ID</i>	-	0.663	0.625	-	0.625	0.645	0.660	0.673	0.684	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

This project supports systems development and collection of Specific Emitter Identification (SEI) information from National Technical Means (NTM) to track commercial ships over 200 gross registered tons world-wide. Research and development will cover improvements and enhancements to Electronic Intelligence technology. This will include improved/next generation SEI technology for miniaturization and automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Propagation in a multi-path signal environment will also be assessed. All work on this project will be undertaken in pursuit of goals stated by the Office of Naval Intelligence and the National Security Agency in support of the Worldwide Ship Tracking Program.

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

	FY 2010	FY 2011	FY 2012
<p><b>Title:</b> SENSOR FUSION</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This effort supports systems development and information fusion of improved SEI technology for automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals.</p> <p><b>FY 2011 Plans:</b> (Transitioned from PE 0604270N/Specific Emitter ID) - Continue task to fuse additional sources of data with SEI data for automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Work toward increasing sensor fusion, collection and reporting automation helped reduce staffing and support remote access and control capability.</p> <p><b>FY 2012 Plans:</b> - Continue all efforts of FY 2011.</p>	-	0.199 0	0.189 0
<p><b>Title:</b> SYSTEM AUTOMATION</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This effort supports development of an autonomous surveillance system capable of providing emitter signal information to a central location.</p> <p><b>FY 2011 Plans:</b> (Transitioned from PE 0604270N/Specific Emitter ID) - Continue task to develop an unmanned, autonomous, remote collection and surveillance system.</p>	-	0.234 0	0.219 0

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy		<b>DATE:</b> February 2011		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0304270N: <i>Electronic Warfare Development</i> - MIP	<b>PROJECT</b> 2260: <i>Specific Emitter ID</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
- Continue task to automate fusion of other sensor information with SEI data collection. <b>FY 2012 Plans:</b> - Continue all efforts of FY 2011.				
<b>Title:</b> TECHNOLOGY REFRESH & COMMUNICATION ENHANCEMENT  <b>Description:</b> This effort improves SEI system performance, real-time communication and tactical use of SEI which will be expanded with next generation SEI technology.  <b>FY 2011 Plans:</b> (Transitioned from PE 0604270N/Specific Emitter ID) - Continue task to incorporate other SEI algorithms into deployed processing software. - Continue task on integrating advanced SEI hardware with WINSEI software to support improved SEI system performance and capabilities for tactical and technical use, and which can be expanded with next generation SEI algorithms. - Continue task to incorporate further message reporting formats for dissemination of SEI data and improve SEI interoperability. - Continue task to expand collection capability to support additional radar types.  <b>FY 2012 Plans:</b> - Continue all efforts of FY 2011.		-	0.230 0	0.217 0
<b>Accomplishments/Planned Programs Subtotals</b>		-	0.663	0.625
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>D. Acquisition Strategy</b> Not applicable.				
<b>E. Performance Metrics</b> MIP Program.				