-----Original Message-----
From: Kirk, Kevin D Civ USAF SAF/AQLS
[mailto:Kevin.Kirk.ctr@pentagon.af.mil]
Sent: Tuesday, November 15, 2011 7:23 AM
To: DDTC Response Team
Subject: ITAR Amendments-Category VIII

To whom it may concern:

I reviewed the ITAR Category VIII published at this web site http://www.federalregister.gov/articles/2011/11/07/2011-28502/amendment-to-the-international-traffic-in-arms-regulations-revision-of-us-munitions-list-category#p-6. I have the following comments on the draft.

1. Paragraph (f), line 2; (h)(2), line 5; (h)(3), last line, (h)(4) last line; (h)(5) last line; (h)(6) last line; and (h)(11) last line change to read, "...therefore..." Rationale: Bring spelling and usage of 'therefor' into the 21st century from its archaic form. The modern Webster definition more clearly indicates that the updated spelling refers to the 'reason' behind a statement.

2. Paragraph (h)(1), line 3. The F-15SE is not a U.S. DoD inventory aircraft. Nor is it being considered for the DoD inventory. The reference should be to the F-15E, which is in the USAF inventory. Rationale: Accuracy.

3. Paragraph (h)(1), line 3, change to read, "... A-10, B-1B,..., F-15E, F-16CJ/DJ, F/A-18E/F/G, F-22..." Rationale: Shows correction from #2 above and adds the A-10 (attack aircraft in USAF inventory) and F-16 Block 50/52 which is the most current version of F-16 in the USAF inventory for accuracy. The F-16 represents the most widely exported and internationally licensed for production U.S. fighter in history (> 3,000 aircraft and still being purchased). Although the A-10 has not been exported, failing to include it effectively prevents exports of this aircraft in the future until export law is updated.

4. Paragraph (h)(1), line 6, change to read, "...of the aforementioned aircraft..." Rationale: Equality of treatment that puts all spare parts under USML review just as the original commodity is. As written the guidance opens the U.S. Government up to a law suit for blatantly favoring one aircraft manufacturer over another (i.e., Boeing's fighters may export spare parts under the EAR while Lockheed Martin fighters may not).

5. Paragraph (h)(6), line 2, change to read, "...UAV launching, ground control, and recovery systems..." Rationale: Covers equipment germane to other phases of flight operations and closes this inadvertent loophole.

6. Section 121.3, paragraph (a)(6), line 6, change to read, "... intelligence, surveillance, reconnaissance, or sensor..." Rationale: Maintain consistency with paragraph (a)(7) above by including the other roles of intelligence and reconnaissance rather than just surveillance. Closes this inadvertent loophole.

7. Where is the section that addresses rapid additions or deletions to this document to respond to new systems of those that were inadvertently omitted?

Respectfully,
Kevin D. Kirk, Civ, DAF
Operational Export and Policy Division
703-693-1453

-----Original Message-----
From: Anderson, Robert, Mr, OSD-ATL [mailto:Robert.Anderson@osd.mil]
Sent: Tuesday, November 15, 2011 2:37 PM
To: Kirk, Kevin D Civ USAF SAF/AQLS; DDTC Response Team
Subject: RE: ITAR Amendments-Category VIII

Kevin, et al,

I would make the following mods to your edits:

3. In addition to your mods, I would also delete "or" in line 3, and at the end of the sentence, add ", or derivatives thereof".

6. You comment on (a)(6), line 6: Should read (a)(6) line 5, according to my printout.

Bob

-----Original Message-----
From: Kirk, Kevin D Civ USAF SAF/AQLS
[mailto:Kevin.Kirk.ctr@pentagon.af.mil]
Sent: Tuesday, November 15, 2011 7:23 AM
To: DDTCResponseTeam@state.gov
Subject: ITAR Amendments-Category VIII

To whom it may concern:

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Maintain consistency with paragraph (a)(7) above by including the other roles of intelligence and reconnaissance rather than just surveillance.
Closes this inadvertent loophole.

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Respectfully,
Kevin D. Kirk, Civ, DAF
Operational Export and Policy Division
703-693-1453

November 27, 2011

To: DDTCResponseTeam@state.gov
publiccomments@bis.doc.gov

From: Bill Root waroot23@gmail.com tel. 301 987 6418

Subject: ITAR Amendments - Category VIII RIN 1400-AC96
EAR Revisions - Control of Aircraft and Related Items RIN 0694-AF36

1. WML Coverage Missing from Proposed VIII and 9x610

The subject ITAR proposed rule requests the public to identify any Wassenaar Munitions List Item 10 coverage not included in proposed ITAR Category VIII or related proposed EAR ECCNs (9x610). Entries in the following Table marked "missing" roughly identify omissions from the proposed two U.S. rules compared with WML coverage, not only in WML 10 but also in other related WML items. The word "roughly" is underlined for the following reasons:

a. Aero gas turbine engine "missing" items are misleading, because of the apparent intent to include such items in future proposed rules for a new Category XIX and related ECCNs.

b. In many respects, proposed USML or CCL substantive terminology differs markedly from WML substantive terminology. For example. The words "combat" in WML 10.a, "assault" and "logistics support" in WML 10.b, and "command and control" in WML 10.c do not appear in proposed Category VIII or ECCN 9A610 and "fighter", "attack", and many other words appear in proposed Category VIII but not in WML 10. Therefore, many substantive comparisons involve subjective interpretations.

c In a few instances, proposed ITAR or EAR nexus terminology differs from WML nexus terminology. For example, VIII.a.5,6 omit nexus words and corresponding WML 10.c uses specially designed or modified. In another example, 9A610.h uses specially designed or modified for parachutes and paragliders while corresponding WML 10.h uses no nexus terminology. Also 9A610.h uses designed or modified for equipment for high altitude parachutists, whereas WML 10.h uses specially designed. VIII.i uses "directly related" whereas WML 22.a uses "required."

d. Wassenaar does not contain a formal definition of "specially designed." (or "specially designed or modified" or "designed or modified") However, there are many records of COCOM discussions referring to a consensus that "specially designed" means "unique," as in the existing MTCR definition. No other interpretation has been found in either U.S. regulations or COCOM or Wassenaar records of discussion. However, 9A610.y.1-25 make it clear that use of "specially designed" in the proposed rules includes much more than components unique to defense articles or 9A610. Under these circumstances, it is unreasonable to assume that a specially designed widget on the WML is the same as a specially designed widget in proposed Category VIII or ECCN 9x10. Conversely, there may be some unique components which are not included in the proposed U.S. lists, e.g., containers or name plates.

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WML Items Related to Proposed Category VIII and ECCNs 9x610

WML Item		Proposed USML	Proposed ECCN
4.b.2.a	equipment for handling bombs:		
	bomb racks	VIII.h.6	
	other	IV.c	
4.b.2.a	equipment for launching missiles	VIII.h.6	
5	fire control systems		
	fire control computers	VIII.h.16	
	other	XII.a	
5.c	fire control countermeasures		
	drive systems and flight control systems specially designed to function after impact of a 7.62 mm or larger projectile	VIII.h.18	
	other	XI.b	
10.a	combat aircraft:		
	bombers	VIII.a.1	
	fighters, fighter-bombers	VIII.a.2	
10.a	components specially designed for combat aircraft	VIII.h	9A610.x
10.b	aircraft, including helicopters and lighter-than-air vehicles for:		
	reconnaissance	VIII.a.7	
	assault:		
	attack helicopters	VIII.a.4	
	fixed wing attack aircraft	VIII.a.2	
	military training		
	jet-powered training for fighter, attack or bomber aircraft	VIII.a.3	
	other		9A610.a
	transporting and airdropping troops and equipment:		
	strategic airlift	VIII.a.9	
	other		9A610.a
	logistics support	missing	
10.b	components specially designed for aircraft:		
	reconnaissance	VIII.h	9A610.x
	assault:		
	attack helicopters	VIII.h	9A610.x
	fixed-wing attack aircraft	VIII.h	9A610.x
	military training		
	jet-powered for fighter, attack, or bomber	VIII.h	9A610.x
	other		9A610.x
	transporting and airdropping troops and equipment	VIII.h	9A610.x

	logistics support:		
	external stores support systems	VIII.h.6	
`	other	missing	
10.c.1	UAVs specially designed or modified for military use	VIII.a.5,6	
10.c.1	components specially designed for UAVs specially designed or modified for military use	VIII.h.2-14, 16-19	9A610.x
10.c.2	launchers for UAVs specially designed or modified for military use:		
	UAV launching systems	VIII.h.6	
	equipment designed or modified for launching of UAVs having range equal to or greater than 300 km		9A610.l
10.c.2	ground support equipment for UAVs specially designed or modified for military use:		
	UAV flight control systems and vehicle management systems with swarming capability or, if weaponized, coordinate targeting	VIII.h.12	
	equipment designed or modified for handling, control or activation of UAVs having range equal to or greater than 300 km		9A610.l
	other	missing	
10.c.3	equipment for command and control related to UAVs specially designed or modified for military use:		
	flight control and vehicle management with swarming capability	VIII.h.12	
	equipment for control		9A610.l,n
	other equipment for command and control	missing	
10.c.3	components specially designed for UAVs specially designed or modified for military use		9A610.x
10.c.3	components specially designed for associated launchers		9A610.x
10.c.3	components specially designed for associated ground support equipment or related command and control equipment:		
	specified in VIII.h or 9A610.l or n		9A610.x
	unspecified	missing	
10.d	aero engines specially designed or modified for military use	missing	
10.d	components specially designed for aero engines specially designed or modified for military use	missing	
10.e	airborne equipment specially designed for use with 10.d aero engines	missing	
10.e	airborne refuelling equipment	VIII.h.11	
10.e	other airborne equipment specially designed for use		

	with 10.b logistics support aircraft		missing
10.e	other airborne equipment specially designed for use with 10.a or 10.b aircraft except logistics support:		
	specified	VIII.h	
	unspecified		missing
10.e	components specially designed for airborne equipment specially designed for use with 10.a or 10.b aircraft:		
	airborne refuelling equipment components	VIII.h.11	
	other components for use with logistic support aircraft	missing	
	other components for use with 10.a or other 10.b aircraft:		
	specified in VIII.h		9A610.x
	unspecified		missing
10.f	pressure refuellers, pressure refuelling equipment, equipment specially designed to facilitate operations in confined areas and ground equipment developed specially for 10.a or 10.b aircraft:		
	ground equipment developed specially but not specially designed		missing
	10.a or 10.b except logistics support		9A610.f
	10.b logistics support aircraft		missing
	10.d aero-engines		missing
10.g	military crash helmets and protective masks, anti-g suits		9A610.g
10.g	components specially designed for military crash helmets and protective masks		9A610.x
10.g	pressurized breathing equipment and partial pressure suits, liquid oxygen converters, and catapults and cartridge actuated devices for emergency escape of personnel, for use in:		
	VIII.a or 9A610.a aircraft		9A610.g
	other aircraft		missing
10.g	liquid oxygen converters used for missiles		missing
10 h	parachutes or paragliders specially designed or modified for military use		9A610.h
10.h.	components specially designed for parachutes or paragliders specially designed or modified for military use		9A610.x
10.h	equipment specially designed for high altitude parachutists: specially designed or modified for military use:		
	designed or modified and specially designed for high altitude parachutists		9A610.h
	designed or modified but not specially designed for high altitude parachutists		missing
10.h	components specially designed for equipment specially		

	designed for high altitude parachutists:		9A910.x
10.i	Automatic piloting systems for parachuted loads, equipment specially designed for military use for controlled opening jumps at any height, including oxygen equipment		9A910.i
10.i	equipment modified for military use for controlled opening jumps at any height	missing	
11.a	electronic equipment specially designed for military use:		
	fire control computers, mission computers, vehicle management coimputers, integrated core processors, stores management systems, armaments control processors, aircraft-weapon interface units and computers	VIII.h.16	
	other	XI.a	
13.c	components specially designed for military specification helmets:		
	helmet mounted cueing systems, helmet mounted displays, display and sight helmets	VIII.h.15	
	other	X.a.6	
17.p	fuel cells specially designed or ‘modified’ for military use:		
	aircraft lithium-ion batteries that provide 28 VDC or 270 VDC	VIII.h.13	
	lead-acid and nickel cadmium batteries		9A610.y.24
	space qualified photovoltaic arrays	XV.e.2	
	other		3A001.e, 3A991.j
18.a	production equipment specially designed or modified for production of WML products		
	production equipment specially designed for production of VIII or 9A610		9B610.a
	modified equipment	missing	
	production of equipment marked “missing” under 10.b-i above	missing	
18.a	production equipment specially designed or modified for production of WML 10.c.1 UAVs		
	production facilities specially designed for UAVs with range 300 km or greater		9B610.c
	UAVs with range less than 300 km	missing	
	modified equipment	missing	
18.b	equipment specially designed for environmental testing of WML products:		
	test equipment specially designed for VIII or 9A610		

	except 9A610.y		9B610
	testing of equipment marked “missing” in 10.b-i above		missing
21.a	software specially designed or modified for development, production, or use of WML equipment, materials, or software:		
	technical data directly related to VIII.a-h	VIII.i	
	software specially designed for development, production, operation, or maintenance of 9A610.a, f-k, 9B610, a,b, or 9C610.a		9D610.a
	software modified		missing
	software for installation, overhaul, or refurbishing		missing
	software for software		missing
	software for items marked “missing” above except under10.c.3		missing
	software specially designed for development, production, operation, installation, maintenance, repair, overhaul or refurbishing of 9A610.l,m,n or 9B610.c		9D610.b,c
	software modified		missing
	software for software		missing
	software for items marked “missing” above under 10.c.3		missing
22.a	technology “required” for development, production, or use of WML items:		
	technical data directly related to VIII	VIII.i	
	technology “required” for development, production, or operation, installation, maintenance, repair, overhaul or refurbishing of 9A610, 9B610, 9C610, or 9D610		9E610
	technology for items marked “missing” above		missing
22.b.1	technology “required” for the design of, the assembly of components into, and the operation, maintenance and repair of, complete production installations for WML items even if the components of such production installations are not specified.	missing	

2. Objective Descriptions.

The subject ITAR proposed rule also requests the public to suggest objective descriptions warranting retention on the USML.

VIII.a.5 unarmed military UAVs.

Proposed VIII.a.6 already covers armed unmanned UAVs. It is suggested that VIII.a.5 be replaced by "armored unmanned UAVs" and "UAVs equipped with mounts for weapons" and that UAVs be added to 9A610.a

VIII.d launching equipment specially designed for VIII.a

Existing IV.b and IV.d control launching equipment for missiles with no specially designed limitation. Inclusion of "specially designed" for aircraft launching equipment indicates (probably unintentionally) that some such equipment should not be controlled (because of not being specially designed)..

VIII.d. recovery equipment specially designed for VIII.a

General purpose equipment is often useful for recovery. WML does not control recovery equipment. There may be no applicable objective description which would warrant retention of recovery equipment on the USML.

VIII.f and VIII.h ... parts, accessories, attachments, and associated equipment.

There is no perceived need for continued USML control of these terms. The examples given in the 121.8(d) definition of "part" do not rise to the level of significance warranting retention on the USML. The examples given of accessories, attachments, and associated equipment given in the definition of those terms in 121.8(c) are separately controlled in I(f) and XIII(g)

VIII.f Developmental aircraft and specially designed components therefor

It is suggested that this be revised to read "Developmental aircraft and developmental components therefor."

VIII.h,1 Components and equipment specially designed for the following U.S.-origin aircraft: B-1B, B-2, F-15SE, F/A18E/F/G, F-22, F-35 (and variants thereof), F-117, or USG technology demonstrators.

Deletion of "and equipment" is suggested. Equipment related to these aircraft must be either a component or an accessory, attachment, or associated equipment. It is also suggested that only components of these aircraft first manufactured less than x years ago be included on the USML. This would follow the precedent in the proposed rule for F-15SE and F/A18E/F/G. Retention of the more modern components on the USML would treat them as developmental, thus avoiding use of specially designed.

VIII.h.2-6,11,14 ... and components specially designed therefor

It is suggested that this phrase be deleted. Components of components are not now controlled. One wonders if there really are components of such items as gearboxes, tail boom, wing folding systems, tail hooks, bomb racks, or lift fans.

VIII.h.9 Non-surface-based flight control systems and effectors, e.g., thrust vectoring from gas ports other than main engine thrust vector specially designed for aircraft.

It is suggested that this item be revised to "aircraft flight control thrust vectoring from gas ports other than main engine thrust vector." Otherwise this item would overlap with VIII.h.10 radar altimeters and include a host of other airborne aids to aircraft flight control, such as those which must be controlled by Commerce per EAA Section 17(c) or simple items like windshield wipers.

VIII.h.16 Fire control computers, mission computers, vehicle management computers, integrated core processors, stores management systems, armaments control processors, aircraft-weapon interface units and computers (e.g., AGM-88 HARM Aircraft Launcher Interface Computer (ALIG)) specially designed for aircraft

It is suggested that this item be revised to read "aircraft fire control computers and aircraft launcher interface computers." The other portions of this proposal are so broad as not to warrant USML controls.

VIII.h.17 Radomes specially designed for operation in multiple or non-adjacent radar bands or designed to withstand a combined thermal shock greater than ...

It is suggested that "specially designed" be deleted, on the basis that the accompanying technical description may be adequate.

VIII.h.18 Drive systems and flight control systems specially designed to function after impact of a 7.62 mm or larger projectile.

It is suggested that "specially designed" be changed to "rated". This assumes that manufacturers must rate such systems in this way to comply with purchase contract terms.

VIII. Technical data (as defined in 120.10 of this subchapter) and defense services (as defined in 120.9 of this subchapter) directly related to the defense articles enumerated in paragraphs (a) through (h) of this category.

It is suggested that:

technical data be changed to "software" and "technology";
directly related be changed to "required" for "development" or "use";
in the WML definition of "use", "and" be changed to "or"; and
software and technology for production of VIII.a-h be added to 9E610.

3. Unilateral U.S. Controls

Munitions export controls on the USML plus the CCL would be much more effective if cooperating foreign governments were to impose the same controls. The following Table roughly indicates with an asterisk each proposed Category VIII or ECCN 9x610 item not now on the Wassenaar Munitions List. Reasons for qualifying these asterisks with the word roughly are set forth in points b, c, and d in the introduction to part 1 of these comments. Double asterisks indicates not now on the WML but recommended for deletion from U.S. controls rather than addition to WML.

Proposed Category VIII and ECCNs 9x610 Related to WML Items

US Item	U.S.General Description	WML Item	WML General Desciprtion
VIII.a.1	bombers	10.a	combat aircraft
VIII.a.2	fighters, fighter bombers,	10.a	combat aircraft
VIII.a.2	fixed-wing attack aircraft	10.b	aircraft designed or modified for assault
VIII.a.3	jet-powered trainers used to train pilots for fighter, attack, or bomber aircraft	10.b	military training aircraft
VIII.a.4	attack helicopters	10.b	aircraft designed or modified for assault
VIII.a.5	unarmed military unmanned UAVs	10.c	UAVs specially designed or modified for military use
VIII.a.6	armed unmanned UAVs	10.c	UAVs specially designed or modified for military use
VIII.a.7	military intelligence aircraft	*	
VIII.a.7	military surveillance aircraft	*	
VIII.a.7	military reconnaissance aircraft	10.b	aircraft designed or modified for military reconnaissance
VIII.a.8	electronic warfare, airborne warning and control aircraft	*	
VIII.a.9	air refueling aircraft	*	
VIII.a.9	strategic airlift aircraft	10.b	aircraft designed or modified for transporting and airdropping troops or military equipment
VIII.a.10	target drones	*	
VIII.a.11	aircraft equipped with any mission systems controlled under this subchapter	**	
VIII.a.12	aircraft capable of being refueled in flight	*	
VIII.d	launching or recovery equipment specially designed for VIII.a	10.f	ground equipment developed specially for 10.a or 10.b

	specially designed but not developed specially	*	
	launch or recovery but not ground specially designed for asterisked VIII.a items	*	
VIII.f	developmental aircraft	*	
VIII.h	aircraft components	10.a, b	components specially designed for 10.a or 10.b
VIII.h	aircraft parts, accessories, attachments and associated equipment	**	
VIII.h.1	components of specified U.S.-origin aircraft:		
	newly manufactured	*	
	not newly manufactured	**	
VIII.h.2	gearboxes	*	
VIII.h.3	tail boom, stabilator, and automatic rotor blade folding systems	*	
VIII.h.4	aircraft wing folding systems	*	
VIII.h.5	tail hooks and arresting gear	*	
VIII.h.6	bomb racks	4.b.2.a	equipment for handling bombs
VIII.h.6	missile launchers	4.b.2.a	equipment for launching missiles
VIII.h.6	missile rails, weapon pylons, pylon-to-launcher adaptors	*	
VIII.h.6	UAV launching systems	10.c.2	UAV launchers
VIII.h.6	external stores support systems	10.b	components specially designed for logistics support aircraft
VIII.h.7	damage/failure adaptive flight control systems	*	
VIII.h.8	threat-adaptive autonomous flight control systems .	*	
VIII.h.9	thrust vectoring from gas ports other than main engine thrust vector	*	
VIII.h.9	other non-surface-based flight control systems and effectors	**	
VIII.h.10	radar altimeters	*	
VIII.h.11	air-to-air refueling systems	10.e	airborne refuelling equipment specially designed for 10.a or 10.b aircraft

VIII.h.12	UAV flight control systems and vehicle management systems with swarming capability	10.c.3	equipment for command and control of UAVs
VIII.h.13	aircraft lithium-ion batteries	17.p	fuel cells specially designed or ‘modified’ for military use
VIII.h.14	lift fans, clutches, and roll posts for short take-off, vertical landing aircraft	*	
VIII.h.15	helmet mounted cueing systems, helmet mounted displays, display and sight helmets	13.c	components specially designed for military specification helmets
VIII.h.16	fire control computers, mission computers, vehicle management computers, integrated core processors, armaments control processors, aircraft-weapon interface units and computers	5 11.a	fire control systems electronic equipment specially designed for military use
VIII.h.17	radomes	*	
VIII.h.18	drive systems and flight control systems specially designed to function after impact of a 7.62 mm or larger projectile	5.c	fire control countermeasure equipment
VIII.h.19	classified items	1-22	
VIII.i	technical data directly related to VIII.a-h	21.a, 22.a	software specially designed or modified and technology required for development, production, or use of WML items
	technical data for asterisked VIII.a-h items	*	
9A610,a	military trainer aircraft	10.b	military training aircraft
9A610.a	military cargo aircraft	10.b	military transporting or airdropping aircraft
9A610.a	military utility fixed-wing aircraft	*	
9A610.a	military helicopters	10.a, b	combat and other “aircraft” specially designed or modified for military use
9A610.a	military observation aircraft	**	
9A610.a	military non-expansive balloons and other lighter than air aircraft	10.b	lighter than air vehicles specially designed or modified for military use
9A610.a	unarmed military aircraft manufactured before 1956 and unmodified since manufacture	**	
9A610.f	pressure refuelers, pressure refueling	10.f	pressure refuellers, pressure

	equipment, equipment specially designed to facilitate operations in confined areas, and ground equipment specially designed for aircraft controlled by either VIII.a or 9A610.a		refuelling equipment, equipment specially designed to facilitate operations in confined areas and ground equipment, developed specially for ML.10.a or ML10.b aircraft
	specially designed but not developed specially for asterisked items in VIII.a or 9A610.a above	** *	
9A610.g	military crash helmets and protective masks	10.g	military crash helmets and protective masks
9A610.g	pressurized breathing equipment and partial pressure suits for use in VIII.a or 9A610.a aircraft,	10.g	pressurized breathing equipment and partial pressure suits for use in aircraft
9A610.g	anti-g suits	10.g	anti-g suits
9A610.g	liquid oxygen converters specially designed for VIII.a or 9A610.a aircraft	10.g	liquid oxygen converters used for aircraft or missiles
9A610.g	catapults and cartridge actuated devices for emergency escape of personnel from VIII.a or 9A610.a aircraft	10.g	catapult and cartridge actuated devices for emergency escape of personnel from aircraft
9A610.h	canopies, harnesses, platforms, electronic release mechanisms specially designed for use with VIII.a or 9A610.a	*	
9A610.h	parachutes and paragliders specially designed or modified for military use	10.h	parachutes and paragliders specially designed or modified for military use
9A610.h	equipment designed or modified for military high altitude parachutists such as suits, special helmets, breathing systems, and navigation equipment	10.h	equipment specially designed for high altitude parachutists (e.g., suits, special helmets, breathing systems, and navigation equipment)
9A610.i	automatic piloting systems for parachuted loads	10.i	automatic piloting systems for parachuted loads
9A610.i	equipment specially designed for military use for controlled opening jumps at any height, including oxygen equipment	10.i	equipment specially designed or modified for military use for controlled opening jumps at any height, including

			oxygen equipment
9A610.j	ground effect machines	*	
9A610.k	military aircraft instrument flight trainers not specially designed to simulate combat	*	
9A610.l	apparatus and devices designed or modified for the handling, control, activation, or launching of UAVs or drones controlled by VIII.a or 9A610.a capable of a range equal to or greater than 300 km	10.c	UAV launchers and ground support equipment and equipment for command and control specially designed or modified for military use
	designed but not specially designed handling, control, or activation but not ground support or command and control	*	
		*	
9A610.m	radar altimeters designed or modified for use in UAVs or drones controlled by VIII.a or 9A610.a capable of delivering a 500 kg payload to a range of at least 300 km	10.c.3	UAV command and control equipment specially designed or modified for military use
	designed but not specially designed	*	
	not used for command and control	*	
9A610.n	hydraulic, mechanical, electro-optical, or electromechanical flight control systems and attitude control equipment designed or modified for UAVs or drones controlled by VIII.a or 9A610.a capable of delivering at least 500 kilograms payload to a range of at least 300 km	10.c.3	UAV command and control equipment specially designed or modified for military use
	designed but not specially designed	*	
	not used for command and control	*	
9A610.x	parts, accessories, and attachments	**	
	components specially designed for a commodity controlled by 9A610.a-k or VIII	10	components specially designed for 10.a,b,c,d,e.h
	components specially designed for: asterisked items in 9A610.a-k or VIII.above	*	
9A610.y	parts, accessories, and attachments	**	
	specific components	**	
9B610.a	test, inspection equipment	*	
9B610.a	production equipment for the development of commodities	**	

9B610.a	parts, accessories, and attachments	**	
9B610.a	production equipment specially designed for the production of 9A610 (except 9A610.y) or VIII commodities and specially designed components therefor	18.a	production equipment specially designed or modified for production of WML products
	production of 9A610.a, f-n, x or VIII.a, d, f, h marked with asterisks	*	
9B610.b	parts, accessories, and attachments	**	
9B610.b	environmental test facilities designed or modified for certification, qualification, or testing of 9A610 (except 9A610.y) or VIII commodities and components specially designed therefor	18.b	environmental test facilities specially designed for certification, qualification, or testing of WML products and components specially designed therefor
	designed or modified but not specially designed	*	
9B610.c	production facilities specially designed for VIII.a or 9A610.aUAVs capable of a range of 300 km or greater	18.a	production equipment specially designed or modified for production of WML 10.c.1 UAVs
	facilities but not equipment	*	
9B610.y	specific equipment	**	
9C610.a	materials specially designed for 9A610 commodities (except 9A610.y)	*	
9C610.y	specific materials	**	
9D610.a	software specially designed for the development, production, operation or maintenance of commodities controlled by 9A610.a, f-k, x, 9B610.a,b, or 9C610.a	21.a	software specially designed or modified for the development, production, or “use” of WML equipment, materials, or software
	operation or maintenance vs operation and maintenance	*	
	software for asterisked portions of 9A610.a, f-k, x and 9B610.a,b	*	
	software for:9C610.a	*	
9D610.b,c	software specially designed for the development, production, operatation, installation, maintenance, repair, overhauling, or refurbishing of 9A610.l,m.n or 9C610.c	21.a	software specially designed or modified for the development, production, or “use” of WML equipment. materials, or software
	change “and” to “or” in definition of		

	"use"	*	
	software for asterisked portions of 9A610.l,m,n,	*	
	software for:9C610.c	*	
9D610.y	specific software	**	
9E610.a	technology required for the development, production, operation, installation, maintenance, repair, overhaul, or refurbishing of commodities or software controlled by 9A610, 9B610, 9C610, or 9D610	22.a	technology required for the development, production, or 'use' of WML items
	change "and" to "or" in definition of "use"	*	
	technology for 9C610	*	
	technology for asterisked 9A610, 9B610, or 9D610 items	*	
9E610.y	specific technology	**	

November 29, 2011

Wassenaar Munitions List (WML) Cross References to United States Munitions List (USML)

This document is related to, but not in response to, the following request appearing in USML Category VIII proposed rule RIN 1400-AC96, 76 FR 68694-68698, November 7, 2011:

> A key goal of this rulemaking is to ensure the USML and the CCL together control all the items that meet Wassenaar Arrangement commitments embodied in Munitions List Category 10 (ML10). To that end, the public is asked to identify any potential lack of coverage brought about by the proposed rules for Category VIII contained in this FRN and the new Category 9 ECCNs published separately by the Department of Commerce when reviewed together. (ML10 refers to Wassenaar Munitions List (WML) item 10.)

A response to this request was sent to DDTCResponseTeam@state.gov and publiccomments@bis.doc.gov on November 27. This document provides comparisons between existing U.S. controls and the entire WML. This might help in the preparation of proposals for other USML Categories and related 600 series ECCNs.

The first Table lists all existing WML items, with cross references to existing USML plus relevant Commerce Control List (CCL) Export Control Classification Numbers (ECCNs) and a few relevant Nuclear Regulatory Commission (NRC) or Department of Energy (DOE) items. Existing ECCNs xx018 cover some, but not all, WML items not specifically enumerated on the USML. A few other existing ECCNs overlap WML coverage. Specific WML items with no corresponding specific USML, CCL, or NRC wording are marked XXI or other relevant "unspecific" USML categories or CCL ECCNs. (USML category XXI covers any article with "substantial military applicability" which is "not specifically enumerated in other USML categories".) Therefore, WML items marked USML XXI or another "unspecific" USML category or CCL ECCN are not now specifically included in any USG agency's control list.

The second Table lists all existing USML categories with cross references to existing WML items. USML categories with no entry except an asterisk in the WML column are now unilaterally controlled by the USML.

Most of the comparisons are not exact because of many differences in substantive and nexus terminology between U.S. and Wassenaar controls and because of no official U.S. or Wassenaar definition of "specially designed" now in effect.

In instances of clear concurrent State and Commerce jurisdiction, both are shown, but with a strike through for one agency's item numbers,

Existing WML Items, with Cross References to Existing US Controls

WML Item	General Description	USML Category	CCL ECCN	NRC Item
1 hdg	components of:			
	smooth bore to caliber 20 mm			
	barrel length <18 inches	I.h		
	barrel length >18 inches	XXI		
	other arms to caliber .50 in	I.h		
	weapons using caseless ammunition	XXI		
	silencers, flash suppressors, riflescopes	1.h		
	gun mountings, clips, other weapon sights	XXI		
1.a	rifles, pistols, machine guns to caliber .50:			
	muzzle-loading mfd after 1937		0A018.c	
	other	I.a		
1.b	smooth bore weapons caliber < 20 mm			
	barrel length <18 inches	I.d		
	barrel length ≥18 <24 inches		0A984	
	barrel length >24 inches	XXI		
1.c	Weapons using caseless ammunition	XXI		
1.d	silencers, flash suppressors	I.e		
1.d	weapon sights			
	riflescopes	I.f		
	other than riflescopes	XXI		
1.d	gun mountings, clips	XXI		
2 hdg	components of:			
	smooth bore weapons caliber ≥20 mm			
	barrel length <18 inches	I.h		
	barrel length >18 inches	XXI		
	signature reduction devices	II.j		
	other weapons caliber > .50	II.j		
	smoke projectors or generators	XIII.g		
	gas projectors or generators	XXI		
	pyrotechnic projectors or generators:			
	flame throwers	II.j		
	other than flame throwers	XXI		
	weapon sights and weapon sight mounts:			
	bomb sights	XII.e		
	other than bomb sights	XXI		
	mountings:			
	naval gun mounts	VI.f		
	other than naval gun mounts	XXI		

2.a	smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	I.d	
	barrel length ≥18 <24 inches		0A984
	barrel length >24 inches	XXI	
2.a	other weapons caliber > .50 in.	II.a	
2.a	signature reduction devices	II.e	
2.b	smoke projectors or generators	XIII.g	1A984
2.b	gas projectors or generators	XXI	
2.b	pyrotechnic projectors or generators:		
	flame throwers	II.b	
	(commercial pyrotechnic devices		1C018.j, 1C992.k)
	pyrotechnic articles having dual		
	commercial and military use		1A984
	other than flame throwers specially		
	designed or modified for military use	XXI	
2.c	weapon sights and weapon sight mounts:		
	bomb sights	XII.a	
	other than bomb sights	XXI	
2.d	mountings:		
	naval gun mounts	VI.c	
	other than naval gun mounts	XXI	
3 hdg	components of ammunition for		
	ML1 rifles, pistols, machine guns	III.d.3:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.d.3	
	barrel length >18 inches		0A018.b
	ML1 weapons using caseless ammunition		0A018.b
	ML2 smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	III.d.3	
	barrel length >18 inches		0A018.b
	ML2 other weapons caliber > .50 in.	III.d.3	
	ML12 kinetic energy weapon systems	III.d.3	
	components of fuze setting devices	XXI	
3.a	ammunition for		
	ML1 rifles, pistols, machine guns	III.a:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.a	
	barrel length ≥18 <24 inches		0A984 buckshot shotgun shells
	barrel length >24 inches	XXI	
	ML1 weapons using caseless ammunition	XXI	
	ML2 smooth bore weapons caliber ≥20 mm		

	barrel length <18 inches	III.a	
	barrel length ≥18 <24 inches		0A984 buckshot shotgun shells
	barrel length >24 inches	XXI	
	ML2 other weapons caliber > .50 in.	III.a	
	ML12 kinetic energy weapon systems	III.a	
3.b	fuze setting devices for ammunition for:		
	ML1 rifles, pistols, machine guns	III.d.2:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.d.2	
	barrel length >18 inches	XXI	
	ML1 weapons using caseless ammunition	XXI	
	ML2 smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	III.d.2	
	barrel length >18 inches	XXI	
	ML2 other weapons caliber > .50 in.	III.d.2	
	ML12 kinetic energy weapon systems	III.d.2	
4 hdg	components of: bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices, missiles, launching equipment for missiles, handling, launching, controlling, discharging, detonating, activating, detecting equipment for:bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices, missiles	IV.h	
4 hdg	components of flame throwers	II.j	
4 hdg	components of simulators related to 4.a	IX.d unspecific	
4 hdg	components of 4.a related laying equipment	XII.e unspecific	
4 hdg	components of smoke canisters, smoke grenades, decoying equipment related to 4.a	XIII.g unspecific	
4 hdg	components of jamming or disrupting equipment related to 4.a	XI.c unspecific	
4 hdg	components of mine sweeping equipment	VI.f	
4 hdg	components of other pyrotechnic devices, fire bombs, incendiary bombs and explosive devices, simulators, smoke canisters, smoke grenades, sweeping equipment and for ‘activities’ related thereto	XXI	
4 hdg	components of powering with one-time operational output or disposing equipment related to 4.a	XXI	
4.hdg	components of equipment for ‘activities’		

	related to Improvised Explosive Devices	XXI
4 hdg	components of mobile gas liquefying equipment	XXI
4.hdg	components of aircraft missile protection systems	XXI
4.a	bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices	IV.a
4.a	missiles	IV.b
4.a	smoke canisters, smoke grenades	XIII.g unspecific1A984 unspecific
4.a	pyrotechnic devices, fire bombs, incendiary bombs and explosive devices	II.b unspecific 1A984
4,a	simulators:for 4.a	IX.b unspecific
4.b	launching equipment for:	
	missiles	IV.b,d
	other 4.a items	IV.a
4.b	handling, controlling, discharging, detonating, activating, detecting equipment for:	
	bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices, missiles	IV.c
	smoke canisters, smoke grenades pyrotechnic devices, fire bombs, incendiary bombs and explosive devices, simulators	XXI
4.b	decoying equipment related to 4.a	XIII.g unspecific
4.b	laying equipment related to 4.a	XII.a unspecific
4.b	jamming or disrupting equipment related to 4.a	XI.a.4 unspecific
4.b	sweeping equipment related to 4.a	
	mine sweeping	VI.c
	other	XXI
4.b	powering with one-time operational output, or disposing equipment related to 4.a	XXI
4.b	Improvised Explosive Devices equipment	XXI
4.b	mobile gas liquefying equipment	XXI
4.b	buoyant electric conducting cable for sweeping magnetic mines	VI.c unspecific
4.c	aircraft missile protection systems	XXI
5 hdg	components and accessories of:	
	bomb sights, gun laying equipment, weapon control systems	XII.e
	weapon sights other than bomb sights	XXI

	bombing computers	XI.c		
	target acquisition and tracking	XI.c, XVIII.e		
	target detection	III.d.3, XVIII.e		
	target identification	XVIII.e		
	target designation, range-finding, surveillance, data fusion, recognition or sensor integration	XXI		
	countermeasures	XI.c		
	field test or alignment equipment	XXI		
5.a	bomb sights, gun laying equipment, weapon control systems	III.d.1, XII.a		
5.a	weapon sights other than bomb sights	XXI		
5.a	bombing computers	XI.a.6		
5.b	target acquisition	XI.a.3.ii, XVIII.a.8		
5.b	target tracking	XI..a.1, XI.a.3.iii, XVIII.a.8		
5.b	target detection	III.d.2, XVIII.b		
5.b	target identification	XVIII.b		
5.b	target designation, range-finding, surveillance, data fusion, recognition or sensor integration	XXI		
5.c	countermeasures	XI.a.4, b		
5.d	field test or alignment equipment	XXI		
6.a	ground vehicles for military use	VII.a-e	9A018.b	
6.a	ground vehicle components	VII.f,g	9A018.b	
6.b	ballistic protection ground vehicles		9A018.b	
6.b	ballistic protection components	XIII.e unspecific		
7.a	biological agents, damage the environment	XXI		
7.a	other biological agents	XIV.b	1C351,2,3,4	
7.a	radioactive materials			NRC 9.c
7.b.1	CW nerve agents	XIV.a.1		
7.b.2	CW vesicant agents	XIV.a.3		
7.b.3	CW incapacitating agents	XIV.a.4		
7.b.4	CW defoliants	XIV.e		
7.c.1-4	CW precursors	XIV.c.1-4		
7.d	riot control agents	XIV.d		
7.d.1	CA	XIV.d.2		
7.d.2	CS	XIV.d.5	1A984	
7.d.3	CN	XIV.d.3	1A984	
7.d.4	CR	XIV.d.4		
7.d.5	DM	XIV.d.1		
7.d.6	MPA	XIV.d unspecified		
7.e.1	dissemination equipment for 7.a ,b, d and			

	components	XIV.f.1	
7.e.2	dissemination equipment for 7.c	XXI	
7.f.1	protective equipment for 7.a, b and components	XIV.f.4	
7.f.1	protective equipment for 7.d and components	XXI	
7.f.2	decontamination equipment for 7.a, b and components	XIV.f.6	1A004.a
7.f.3	chemical mixtures for decontamination	XXI	
7.g	detection or identification equipment	XIV.f.2	1A004.c
7.g	detection or identification equipment components	XIV.f	1A004 hdg
7.h	biopolymers	XIV.g	
7.h	cultures to produce biopolymers	XXI	
7.i.1	biocatalysts	XIV.g	
7.i.2	biocatalyst production genetic information	XXI	
8.a	explosives	V.a	1C018.c-g,k
8.a.1-6	explosives	V.a.1-6	
8.a.7	DATB	V.a.34	
8.a.8-32	explosives	V.a.7-31	
8.a.33.a	detonation velocity	V.a.32	1C239
8.a.33.b	detonation pressure	V.a.32	
8.a.34	other organic explosives	V.a.33	
8.b.1-7	propellants	V.b.1-7	
8.c.1	aircraft fuels specially formulated	V.c.4	
8.c.2-4	pyrotechnics, fuels, related substances	V.c.1-31C018.j	
8.c.5.a,b	metal fuels	V.c.6.i,ii	
8.c.5.a.1	beryllium	V.c.6.i.A	1C111.a.2, 1C230
8.c.5.a.2	iron powder	V.c.6.i.B	
8.c.5.b.1	zirconium	V.c.6.ii.B	1C011.a,1C111.a.2,1C234
8.c.5.b.1	magnesium	V.c.6.ii.B	1C011.a,1C111.a.2,1C228
8.c.5.b.2	boron	V.c.6.ii.A	1C011.b,1C111.a.2,1C225
8.c.6	thickeners for hydrocarbon fuels	V.c.9	
8.c.7	perchlorates, chlorates, chromates	V.d.11	
8.c.8	spherical aluminum powder	V.c.6	
8.c.9	titanium subhydride	V.c.8	
8.d.1	ADN	V.d.1	
8.d.2	AP	V.d.2	
8.d.3	fluorine compounds		1C018.m, 1C238
8.d.4-9	oxidizers	V.d.4-9	
8.d.10	inhibited red fuming nitric acid	V.d.10	~~1C111.a.3.e~~
8.e.1	AMMO	V.e.1	
8.e.2	BAMO	V.e.2	

8.e.3	BDNPA	V.e.18	
8.e.4	BDNPF	V.e.18	
8.e.5	BTTN	V.e.3	
8.e.6	energetic monomers, plasticizers, polymers	V.e.10	
8.e.7	FAMAO	V.e.4	
8.e.8	FEFO	V.e.5	
8.e.9	FPF-1	V.e.13	
8.e.10	FPF-3	V.e.14	
8.e.11	GAP	V.e.6	
8.e.12	HTPB	V.e.7	
8.e.13	alcohol functionalized poly(epichlorohydrin)	V.e.17	
8.e.14	NENAs	V.e.8	
8.e.15	PGN	V.e.15	
8.e.16	poly-NIMMO	V.e.9	
8.e.17	polynitroorthocarbonates	V.e.12	
8.e.18	TVOPA	V.e.11	
8.f.1	basic copper salicylate	V.f.1	
8,f,2	BHEGA	V.f.2	
8.f.3	BNO	V.f.20	
8.f.4.a	butacene	V.f.3	~~1C111.c.1~~
8.f.4	ferrocene derivatives other than buracene	V.f.3	
8.f.5-12	additives	V.f.4-11	
8.f.13	N-methyl-p-nitroaniline	V.f.16	
8.f.14	3-nitraza-1,5-pentane diisocyanate	V.f.12	
8.f.15	organo-metallic coupling agents	V.f.13	
8.f.16	polycyanodifluoroaminoethyleneoxide	V.f.19	
8.f.17	polyfunctional aziridine amides	V.f.14	
8.f.18	propyleneimine		1C018.l
8.f.19	superfine iron oxide	V.f.15	
8.f.20	TEPAN	V.f.16	
8.f.21	TEPANOL	V.f.17	
8.f.22	TPB	V.f.18	
8.g.1-8	precursors	V.g.1-8	
9.a.1	vessels for military use	VI.a	
9.a.1	hulls for vessels for military use	XXI	
9.a.1	components for vessels for military use	VI.f	
9.a.2	other vessels with:		
9.a.2.a	weapons .50 caliber or more	VI.a	
9.a.2.b	fire control systems	XXI	
9.a.2.c.1	CBRN protection	XXI	
9.a.2.c.2	system for decontamination	XXI	
9.a.2.d	weapon countermeasure systems	XXI	
9.b.1	diesel engines for submarines		8A018.b.1

9.b.2	electric motors for submarines		8A018.b.2
9.b.3	non-magnetic diesel engines		8A018.b.3
9.b.4	Air Independent Propulsion systems	XXI	
9.c	electronic underwater sound detection	XI,a,1	
9.c	other underwater detection devices	XXI	
9.c	components of electronic underwater sound detection	XI.c	
9.c	components of other underwater detection devices	XXI	
9.d	submarine and torpedo nets	VI.d	8A018.b.4
9.f	fiber optic hull penetrators for military use		8A002.c
9.f	hull penetrators other than fiber optic	XXI	
9.f	hull penetrator components	XXI	
9.g	silent bearings	VI.f, XIII.g unspecified	
10.a	combat aircraft	VIII.a	
10.a	combat aircraft components	VIII.h	
10.b	aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	VIII.a	9A018.a
10.b	components of aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	VIII.h	9A018.a.3
10.b	aircraft, including helicopters and lighter-than-air vehicles for assault, logisitics support	XXI	
10.b	components of aircraft, including helicopters and lighter-than-air vehicles for assault, logisitics support	XXI	
10.c	unmanned airborne vehicles military use	VIII.a	9A120
10.c	components of UAVs	VIII.h	
10.c	UAV launchers and ground support equipment and command and control equipment	XXI	
10.c	components of UAV launchers and ground support equipment and command and control equipment	XXI	
10.d	aero reciprocating engines for military use	XXI	
10.d	other aero engines for military use	VIII.b	9A001, 9A991.c
10.d	components of aero reciprocating engines for military use	XXI	
10.d	components of other aero engines for military use	VIII.b, h	9A003, 9A991,c

10.e	airborne equipment, including airborne refueling equipment, for 10.a,b,d	VIII.c	
10.e	components of airborne equipment, including airborne refueling equipment, for10.a,b,d	VIII.h	
10.f	pressure refuellers, pressure refuelling equipment, equipment for operations in confined areas, and ground equipment for 10.a,b,d		9A018.c
10.g	helmets	X.a.6	0A018.d
10.g	masks	X.a.7	
10.g	pressurized breathing equipment		9A018.d
10.g	partial pressure suits	X.a.4	
10.g	anti-g suits	X.a.3	
10.g	liquid oxygen converters	XXI	
10.g	emergency escape from aircraft	VIII.c	
10.h.1	parachutes		9A018.e
10.h.1	parachute components	XXI	
10.h.2	paragliders and components	XXI	
10.h.3	high altitude parachutist equipment:		
	pressure suits above 55,000 feet	X.a.4	
	other	XXI	
10.h.3	high altitutde parachutist equipment components:		
	pressure suits above 55.000 feet	X.d	
	other	XXI	
10.i	automatic piloting parachuted loads, equipment for controlled opening jumps, oxygen equipment	XXI	

11 hdg	components of	
	electronic countermeasures	XI.c
	surveillance and monitoring of electro-magnetic spectrum	XI.c
	underwater acoustic countermeasures	XI.c
	magnetic jamming and decoy underwater countermeasures	XXI
	equipment using ciphering processes	XIII.b
	identification equipment	XI.c
	authentification equipment	XXI
	keyloader, key management equipment	XIII.b
	guidance equipment	XII.e
	navigation equipment	XI.c
	digital troposcatter-radio communications transmission equipment	XXI

	digital demodulators for signals intelligence	XXI	
	"Automated Command and Control Systems"	XI.a.6 unspecific	
	GNSS jamming equipment	XXI	
11.a Note a	electronic countermeasures	XI.a.4	
11.a Note b	frequency agile tubes	XI.b.1 unspecific	
11.a Note c	surveillance and monitoring of electro-magnetic spectrum	XI.b	
11.a Note d	underwater acoustic countermeasures	XI.a.2	
11.a Note d	magnetic jamming and decoy underwater countermeasures	XXI	
11.a Note e	equipment using ciphering processes	XIII.b	
11.a Note f	identification equipment	XI.a.5	
11.a Note f	authentification equipment	XXI,	
11.a Note f	keyloader, key management\ equipment	XIII.b	
11.a Note g	guidance equipment	XII.a	
11.a Note g	navigation equipment	XI.a.5	
11.a Note h	digital troposcatter-radio communications transmission equipment	XXI	
11.a Note i	digital demodulators for signals intelligence	XXI	
11.a Note j	"Automated Command and Control Systems"	XI.a.6 unspecific	
11.b	GNSS jamming equipment	XXI	
12 hdg	components of		
	kinetic energy weapons	II.j	
	kinetic energy weapon test equipment	XXI	
12.a	kinetic energy weapons	II.d	
12.b	kinetic energy weapon test equipment	XXI	
13.a	armored plate	XIII.e	
13.b	constructions for ballistic protection		0A018.a unspecific
13.b	ballistic protection construction components		0A018.a unspecific
13.c	helmets mfd to military specifications:		
	compatible with communications hardware or optical devices	X.a.6	
	other		0A018.d
13.c	helmet components:		
	compatible with communications hardware or optical devices	X.d	
	other	XXI	

13.d	body armor	X.a.1	
13.d	body armor components	X.d	
14	operational flight trainers	VIII.a	9A018.a
14	military instrument flight trainers		9A018.f
14	anti-submarine trainers, human-rated centrifuges, radar trainers, navigation trainers, armament trainers, pilot-less aircraft trainers	IX.a	
14	attack trainers, radar target trainers, radar target generators, gunnery training devices, missile launch trainers, target equipment, drone aircraft, mobile training units, training equipment for ground military operations	XXI	
14	military scenario simulation	XXI	
14	simulators for ML1 or ML2 use	IX.b	
14	components and accessories for:		
	operational flight trainers	VIII.h	
	military instrument flight trainers		9A018.f
	anti-submarine trainers, human-rated centrifuges, radar trainers, navigation trainers, armament trainers pilot-less aircraft trainers	IX.d	
	attack trainers, radar target trainers, radar target generators, gunnery training devices, missile launch trainers, target equipment, drone aircraft, mobile training units, training equipment for ground military operations	XXI	
	military scenario simulation	XXI	
	simulators for ML1 or ML2 use	IX.d	
15 hdg	components of:		
	recorders and image processing equipment	XXI	
	cameras	XIII.a	
	image intensifier equipment infrard	XII.e	
	image intensifier equipment not infrared	XXI	
	infrared imaging equipment	XII.e	
	thermal imaging equipment	XXI	
	imaging radar sensor equipment	XI.c	
	countermeasure equipment	XXI	
15 hdg	accessories for		
	recorders and image processing equipment	XXI	
	cameras	XXI	

	image intensifier equipment infrard	XII.e		
	image intensifier equipment not infrared	XXI		
	infrared imaging equipment	XII.e		
	thermal imaging equipment	XXI		
	imaging radar sensor equipment	XI.e		
	countermeasure equipment	XXI		
15.a	recorders and image processing equipment	XXI		
15.b	cameras	XIII.a		
15.c	image intensifier equipment infrard	XII.c		
15.c	image intensifier equipment not infrared	XXI		
15.d	infrared imaging equipment	XII.c		
15.d	thermal imaging equipment	XXI		
15.e	imaging radar sensor equipment	XI.a.3.v		
15.f	countermeasure equipment	XXI		
16	forgings, castings, other unfinished products	IV.f, XIII.d,f	unspecified	
17 hdg.	components of:			
	diving and underwater swimming	XXI		
	construction equipment military use		0A018.a	
	signature suppression fittings, treatments	XXI		
	signature suppression coatings	II.j		
	Field engineer equipment in combat zone	XXI		
	robots military use, protecting hydraulic lines, or in EMP environment	XXI		
	libraries for military use	XXI		
	nuclear power generating equipment	XXI		
	naval nuclear propulsion	VI.f		
	nuclear propulsion other than naval	XXI		
	“nuclear reactors”			NRC8(a)
	signature suppression equipment	XXI		
	signature suppression materials	II.d		
	simulation of military nuclear reactors	XVI.d		
	mobile repair shops	XXI		
	field generators	XXI		
	containers	XXI		
	ferries, bridges, pontoons	XXI		
	test models	XXI		
	laser protection	XXI		
	fuel cells	XXI		
17.a.	diving and underwater swimming	XIII.c	~~8A018.a~~	
17.b	construction equipment military use		0A018.a	
17.c	signature suppression fittings, treatments	XXI		
17.c	signature suppression coatings	II.e		

17.d	Field engineer equipment in combat zone	XXI		
17.e	robots military use, protecting hydraulic lines, or in EMP environment	XXI		
17.f	libraries for military use	XXI		
17.g	nuclear power generating equipment	XXI	2A290	
17.g	naval nuclear propulsion	VI.e		
17.g	nuclear propulsion other than naval	XXI		
17.g	“nuclear reactors”			NRC8(a)
17.h	signature suppression equipment	II.e		
17.h	signature suppression materials	II.e		
17.i	simulation of military nuclear reactors	XVI.b		
17.j	mobile repair shops	XXI		
17.k	field generators	XXI		
17.l	containers	XXI		
17.m	ferries, bridges, pontoons	XXI		
17.n	test models	XXI		
17.o	laser protection	XXI		
17.p	fuel cells	XIII.h	3A001.e.1,4, 8A002.j.3	
18.a	munitions production ~~II.g, IX.c,X.c, XIII.k,XIV.l,XVIII.e~~		1B018.a, 2B018, 9B115,. 9B116	
18.a	munitions production components		1B018.a.4, 2B018	
18.b	environmental test facilities		1B018.b, 9B106	
19 hdg	components of 19.a,b,c,d,e,f	XVIII..e		
19.a	directed energy weapon laser systems	XVIII.a.2		
19.b	directed energy particle beam systems	XVIII.a.3		
19.c	directed energy high power RF systems	XVIII.a.5		
19.d	detection, identification, defense against a,b,c	XVIII.b		
19.e	test models	XVIII.d		
19.f	laser systems to cause blindness	XVIII.a.1		
20 hdg	components and accessories of 20.a,b	XXI		
20.a	cryogenic equipment in a vehicle	XXI		
20.b	superconductive electrical equipment	XXI		
21.a	software for equipment and materials listed in WML 1-20 (see below)			
21.a	software for software listed in WML 21:			
	cryptographic	XIII.l for XIII.b		
	other	XXI		
21.b	software not for WML 1-21 for:			
21.b.1	simulating chemical or biological weapons	XIV.m for XIV.i		
21.b.1	design of nuclear weapons	XVI.e for XVI.a		
21.b.1	simulating other weapons	XXI		

21.b.2	simulating military operations	XXI
21.b.3	determining chemical or biological weapons effects	XIV.m for XIV.i
21.b.3	determining nuclear weapons effects	XVI.e for XVI.b
21.b.3	determining other weapons effects	XXI
21.b.4	command and control	XXI (XI.d for XI.a.5 covered by 21.a for 11.a Note j)
21.c	enable equipment not on WML to perform functions of WML specified equipment	XXI

22.a	technology, other than specified in 22.b, "required" for WML items (see below)	
22.b	technology "required" for:	
22.b.1	unlisted components of complete installations for production of listed items (1B018.a.2 covers only "specialized" components of 1B018.a.1 complete installations for production of only explosives and solid propellants.)	XXI
22.b.2	production of antique small arms reproductions	XXI
22.b.3	toxicological agents, related equipment or components covered by WML 7.a-g (covered by 22.a, see below)	
22.b.4	biopolymers covered by WML 7.h (covered by 22.a, see below)	
22.b.5	incorporation of biocatalysts covered by WML 7.i.1 into military carrier substances or material. .	XXI

U.S. cross-references to WML software 21.a and technology 22.a for WML 1-20

WML Item	General Description	USML Category	CCL ECCN	DOE
1 hdg	components of:			
	smooth bore to caliber 20 mm			
	barrel length <18 inches	I.i		
	barrel length >18 inches	XXI		
	other arms to caliber .50 in	I.i		
	weapons using caseless ammunition	XXI		
	silencers, flash suppressors, riflescopes	1.i		
	gun mountings, clips, other weapon sights	XXI		
1.a	rifles, pistols, machine guns to caliber .50:			

	muzzle-loading mfd after 1937		0E018. (software missing)
	other	I.i	
1.b	smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	I.i	
	barrel length ≥18 <24 inches		0E984 (software and use technology missing)
	barrel length >24 inches	XXI	
1.c	Weapons using caseless ammunition	XXI	
1.d	silencers, flash suppressors	I.i	
1.d	weapon sights		
	riflescopes	I.i	
	other than riflescopes	XXI	
1.d	gun mountings, clips	XXI	
2 hdg	components of:		
	smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	I.i	
	barrel length >18 inches	XXI	
	other weapons caliber > .50	II.k	
	signature reduction devices	II.k	
	smoke projectors or generators	XIII.l	
	gas projectors or generators	XXI	
	pyrotechnic projectors or generators:		
	flame throwers	II.k	
	other than flame throwers	XXI	
	weapon sights and weapon sight mounts:		
	bomb sights	XII.f	
	other than bomb sights	XXI	
	mountings:		
	naval gun mounts	VI.g	
	other than naval gun mounts	XXI	
2.a	smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	I.i	
	barrel length ≥18 <24 inches		0E984 (software and use technology missing)
	barrel length >24 inches	XXI	
2.a	other weapons caliber > .50 in.	II.k	
2.b	smoke projectors or generators	XIII.l	
2.b	gas projectors or generators	XXI	
2.b	pyrotechnic projectors or generators:		
	flame throwers	II.k	
	(commercial pyrotechnic devices		1E001 (software missing for 1C018)

	other than flame throwers specially designed or modified for military use	XXI	
2.c	weapon sights and weapon sight mounts:		
	bomb sights	XII.f	
	other than bomb sights	XXI	
2.d	mountings:		
	naval gun mounts	VI.g	
	other than naval gun mounts	XXI	
3 hdg	components of ammunition for		
	ML1 rifles, pistols, machine guns	III.e:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.e	
	barrel length >18 inches		0E018 (software missing)
	ML1 weapons using caseless ammunition		0E018 (software missing)
	ML2 smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	III.e	
	barrel length >18 inches		0E018 (software missing)
	ML2 other weapons caliber > .50 in.	III.e	
	ML12 kinetic energy weapon systems	III.e	
	components of fuze setting devices	XXI	
3.a	ammunition for		
	ML1 rifles, pistols, machine guns	III.e:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.e	
	barrel length ≥18 inches	XXI	
	ML1 weapons using caseless ammunition	XXI	
	ML2 smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	III.e	
	barrel length ≥18 inches	XXI	
	ML2 other weapons caliber > .50 in.	III.e	
	ML12 kinetic energy weapon systems	III.e	
3.b	fuze setting devices for ammunition for::		
	ML1 rifles, pistols, machine guns	III.e:	
	ML1 smooth bore weapons caliber < 20 mm		
	barrel length <18 inches	III.e	
	barrel length >18 inches	XXI	
	ML1 weapons using caseless ammunition	XXI	
	ML2 smooth bore weapons caliber ≥20 mm		
	barrel length <18 inches	III.e	
	barrel length >18 inches	XXI	
	ML2 other weapons caliber > .50 in.	III.e	
	ML12 kinetic energy weapon systems	III.e	

4 hdg	components of bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices, missiles, launching equipment for missiles, handling, launching, controlling, discharging, detonating, activating, detecting equipment for:bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices, missiles	IV.i
4 hdg	components of flame throwers	II.k
4 hdg	components of simulators related to 4.a	IX.e unspecific
4 hdg	components of 4.a related laying equipment	XII.f unspecific
4 hdg	components of smoke canisters, smoke grenades, decoying equipment related to 4.a	XIII.l unspecific
4 hdg	components of jamming or disrupting equipment related to 4.a	XI.d unspecific
4 hdg	components of mine sweeping equipmtne	VI.g
4 hdg	components of other pyrotechnic devices, fire bombs, incendiary bombs and explosive devices, simulators, smoke canisters, smoke grenades, sweeping equipment and for ‘activities’ related thereto	XXI
4 hdg	components of powering with one-time operational output or disposing equipment related to 4.a	XXI
4.hdg	components of equipment for ‘activities’ related to Improvised Explosive Devices	XXI
4 hdg	components of mobile gas liquefying equipment	XXI
4,hdg	components of aircraft missile protection systems	XXI
4.a	bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices	IV.i
4.a	missiles	IV.i
4.a	smoke canisters, smoke grenades	XIII.l unspecific
4.a	pyrotechnic devices, fire bombs, incendiary bombs and explosive devices	II.k unspecific
4,a	simulators:for 4.a	IX.e unspecific
4.b	launching equipment	IV.i
4.b	handling, controlling, discharging, detonating, activating, detecting equipment for: bombs, torpedoes, grenades, rockets, mines, depth charges, demolition	

	devices, missiles	IV.i	
	smoke canisters, smoke grenades pyrotechnic devices, fire bombs, incendiary bombs and explosive devices, simulators	XXI	
4.b	decoying equipment related to 4.a	XIII.l unspecific	
4.b	laying equipment related to 4.a	XII.f unspecific	
4.b	jamming or disrupting equipment related to 4.a	XI.d unspecific	
4.b	sweeping equipment related to 4.a		
	mine sweeping	VI.g	
	other	XXI	
4.b	powering with one-time operational output, or disposing equipment related to 4.a	XXI	
4.b	Improvised Explosive Devices equipment	XXI	
4.b	mobile gas liquefying equipment	XXI	
4,b	buoyant electric conducting cable for sweeping magnetic mines	VI.g unspecific	
4.c	aircraft missile protection systems	XXI	
5.a	bomb sights, gun laying equipment, weapon control systems and components and accessories	III.e, XII.f	
5.a	weapon sights other than bomb sights and components and accessories	XXI	
5.a	bombing computers and components and accessories	XI.d	
5.b	target acquisition, components, accessories	XI.d, XVIII.f	
5.b	target tracking, components, accessories	XI.d, XVIII.f	
5.b	target detection, components, accessories	III.e, XVIII.f	
5.b	target identification, components, accessories	XVIII.f	
5.b	target designation, range-finding, surveillance, data fusion, recognition or sensor integration, components, accessories	XXI	
5.c	countermeasures, components, accessories	XI.d	
5.d	field test or alignment equipment, components, accessories	XXI	
6.a	ground vehicles for military use	VII.i	9D018, 9E018 (development and production software missing for 9A018)
6.a	ground vehicle components	VII.i	9D018, 9E018 (development and production software missing for

				9A018)
6.b	ballistic protection ground vehicles			9D018, 9E018 (development and production software missing for 9A018)
6.b	ballistic protection components	XIII.l unspecific		
7.a	biological agents damage the environment	XXI		
7.a	other biological agents	XIV.m		
7.a	radioactive materials			NRC 9(c)
7.b.1	CW nerve agents	XIV.m		
7.b.2	CW vesicant agents	XIV.m		
7.b.3	CW incapacitating agents	XIV.m		
7.b.4	CW defoliants	XIV.m		
7.c.1-4	CW precursors	XIV.m		
7.d	riot control agents	XIV.m		
7.d.1	CA	XIV.m		
7.d.2	CS	XIV.m		
7.d.3	CN	XIV.m		
7.d.4	CR	XIV.m		
7.d.5	DM	XIV.m		
7.d.6	MPA	XIV.m unspecified		
7.e	dissemination equipment	XIV.m		
7.e	dissemination equipment components	XIV.m		
7.f.1	protective equipment	XIV.m		
7.f.1	protective equipment components	XIV.m		
7.f.2	decontamination equipment	XIV.m		
7.f.2	decontamination equipment components	XIV.m		
7.f.3	chemical mixtures for decontamination	XXI		
7.g	detection or identification equipment	XIV.m		
7.g	detection or identification equipment components	XIV.m		
7.h	biopolymers	XIV.m		
7.h	cultures to produce biopolymers	XXI		
7.i.1	biocatalysts	XIV.m		
7.i.2	biocatalyst production genetic information	XXI		
8.a	explosives		V.h	1E001 (software missing for 1C018)
8.a.1-6	explosives		V.h	
8.a.7	DATB		V.h	
8.a.8-32	explosives		V.h	
8.a.33.a	detonation velocity		V.h	1E001, 1E201 (software missing for 1C239)

8.a.33.b	detonation pressure	V.h	
8.a.34	other organic explosives	V.h	
8.b.1-7	propellants	V.h	
8.c.1	aircraft fuels specially formulated	V.h	
8.c.2-4	pyrotechnics, fuels, related substances	V.h	1E001 (software and use technology missing for 1C018)
8.c.5.a,b	metal fuels	V.h	
8.c.5.a.1	beryllium	V.h	
8.c.5.a.2	iron powder	V.h	
8.c.5.b.1	zirconium	V.h	
8.c.5.b.1	magnesium	V.h	
8.c.5.b.2	boron	V.h	
8.c.6	thickeners for hydrocarbon fuels	V.h	
8.c.7	perchlorates, chlorates, chromates	V.h	
8.c.8	spherical aluminum powder	V.h	
8.c.9	titanium subhydride	V.h	
8,d,1	AND	V.h	
8.d.2	AP	V.h	
8.d.3	fluorine compounds		1E001, 1E201 (software missing for 1C238)
8.d.4-9	oxidizers	V.h	
8.d.10	inhibited red fuming nitric acid	V.h	
8.e.1	AMMO	V.h	
8.e.2	BAMO	V.h	
8.e.3	BDNPA	V.h	
8.e.4	BDNPF	V.h	
8.e.5	BTTN	V.h	
8.e.6	energetic monomers, plasticizers, polymers	V.h	
8.e.7	FAMAO	V.h	
8.e.8	FEFO	V.h	
8.e.9	FPF-1	V.h	
8.e.10	FPF-3	V.h	
8.e.11	GAP	V.h	
8.e.12	HTPB	V.h	
8.e.13	alcohol functionalized poly(epichlorohydrin)	V.h	
8.e.14	NENAs	V.h	
8.e.15	PGN	V.h	
8.e.16	poly-NIMMO	V.h	
8.e.17	polynitroorthocarbonates	V.h	
8.e.18	TVOPA	V.h	
8.f.1	basic copper salicylate	V.h	
8,f,2	BHEGA	V.h	
8.f.3	BNO	V.h	

8.f.4.a	butacene	V.h	
8.f.4	ferrocene derivatives other than buracene	V.h	
8.f.5-12	additives	V.h	
8.f.13	N-methyl-p-nitroaniline	V.h	
8.f.14	3-nitraza-1,5-pentane diisocyanate	V.h	
8.f.15	organo-metallic coupling agents	V.h	
8.f.16	polycyanodifluoroaminoethyleneoxide	V.h	
8.f.17	polyfunctional aziridine amides	V.h	
8.f.18	propyleneimine		1E001 (software and use technology missing for 1C018)
8.f.19	superfine iron oxide	V.h	
8.f.20	TEPAN	V.h	
8.f.21	TEPANOL	V.h	
8.f.22	TPB	V.h	
8.g.1-8	precursors	V.h	
9.a,1	vessels for military use	VI.g	
9.a.1	hulls for vessels for military use	XXI	
9.a.1	components for vessels for military use	VI.g	
9.a.2	other vessels with:		
9.a.2.a	weapons .50 caliber or more	VI.g	
9.a.2.b	fire control systems	XXI	
9.a.2.c.1	CBRN protection	XXI	
9.a.2.c.2	system for decontamination	XXI	
9.a.2.d	weapon countermeasure systems	XXI	
9.b.1	diesel engines for submarines		(software and technology missing for 8A018)
9.b.2	electric motors for submarines		(software and technology missing for 8A018)
9.b.3	non-magnetic diesel engines		(software and technology missing for 8A018)
9.b.4	Air Independent Propulsion sysems	XXI	
9.c	underwater electronic sound detection and components	XI,d	
9.c	other underwater detection devices and components	XXI	
9.c	underwater detection components	XI.d	
9.d	submarine and torpedo nets	VI.g	(software and technology missing for 8A018)
9.f	fiber optic hull penetrators for military use		(software and technology missing for 8A018)
9.f	hull penetrators other than fiber optic	XXI	
9.f	hull penetrator components	XXI	

9.g	silent bearings	VI.g, XIII.l unspecified	
10.a	combat aircraft	VIII.i	
10.a	combat aircraft components	VIII.i	
10.b	aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	VIII.i	9D018, 9E018 (development and production software missing for 9A018)
10.b	components of aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	VIII.i	9D018, 9E018 (development and production software missing for 9A018)
10.b	aircraft, including helicopters and lighter-than-air vehicles for assault, logistics support	XXI	
10.b	components of aircraft, including helicopters and lighter-than-air vehicles for assault, logistics support	XXI	
10.c	unmanned airborne vehicles military use	VIII.i	(software and technology missing for 9A120)
10.c	UAV military use components	VIII.i	
10.c	UAV launchers and ground support equipment and command and control equipment	XXI	
10.c	components of UAV launchers and ground support equipment and command and control equipment	XXI	
10.d	aero reciprocating engines for military use	XXI	
10.d	other aero engines for military use	VIII.i	9D001, 9E003
10.d	components of aero reciprocating engines for military use	XXI	
10.d	components of other aero engines for military use	VIII.i	9D001, 9E003
10.e	airborne equipment for 10.a,b,d	VIII.i unspecific	
10.e	components of airborne equipment for 10.a,b,d	VIII.i unspecific	
10.f	pressure refuellers, pressure refuelling equipment, equipment for operations in confined areas, and ground equipment for 10.a,b,d		9D018, 9E018 (development

			and production software missing for 9A018)
10.g	helmets	X.e	0E018 (software missing for 0A018)
10.g	masks	X.e	
10.g	pressurized breathing equipment		9D018, 9E018 (development and production software missing for 9A018)
10.g	partial pressure suits	X.e	
10.g	anti-g suits	X.e	
10.g	liquid oxygen converters	XXI	
10.g	emergency escape from aircraft	VIII.i	
10.h.1	parachutes		9D018, 9E018 (development and production software missing for 9A018)
10.h.1	parachute components	XXI	
10.h.2	paragliders and components	XXI	
10.h.3	high altitude parachutist equipment:		
	pressure suits above 55,000 feet	X.e	
	other	XXI	
10.h.3	high altitude parachutist equipment components:		
	pressure suits above 55.000 feet	X.e	
	other	XXI	
10.i	automatic piloting parachuted loads, equipment for controlled opening jumps, oxygen equipment	XXI	
10.i	components for 10.i	XXI	
11.a	electronic countermeasures, frequency agile tubes, surveillance and monitoring of electro-magnetic spectrum, underwater acoustic countermeasures, identification equipment, navigation equipment, “Automated Command and Control Systems”, and components therefor	XI.d	
	guidance equipment and components	XII.f	
	equipment using ciphering processes, keyloader, key management equipment, and components therefor	XIII.l	
	authentification equipment, ,		

	magnetic jamming and decay underwater countermeasures, digital troposcatter-radio communications transmission equipment, digital demodulators for signals intelligence, and components therefor	XXI	
11.b	GNSS jamming equipment and components	XXI	
12 hdg	components of		
	kinetic energy weapons	II.k	
	kinetic energy weapon test equipment	XXI	
12.a	kinetic energy weapons	II.k	
12.b	kinetic energy weapon test equipment	XXI	
13.a	armored plate	XIII.l	
13.b	constructions for ballistic protection		0E018 unspecific (software missing for 0A018)
13.b	ballistic protection construction components		0E018 unspecific (software missing for 0A018)
13.c	helmets mfd to military specifications:		
	compatible with communications hardware or optical devices	X.e	
	other		0E018 unspecific (software missing for 0A018)
13.c	helmet components:		
	compatible with communications hardware or optical devices	X.e	
	other	XXI	
13.d	body armor	X.e	
13.d	body armor components	X.e	
14	operational flight trainers	VIII.i	9D018, 9E018 (development and production software missing for 9A018)
14	military instrument flight trainers		9D018, 9E018 (development and production software missing for 9A018)
14	anti-submarine trainers, human-rated centrifuges, radar trainers, navigation trainers, armament trainers, pilot-less aircraft trainers	IX.e	
14	attack trainers, radar target trainers, radar target generators, gunnery training devices, missile launch trainers, target equipment,		

	drone aircraft, mobile training units, training equipment for ground military operations	XXI	
14	military scenario simulation	XXI	
14	simulators for ML1 or ML2 use	IX.e	
14	components and accessories for: operational flight trainers	VIII.i	
	military instrument flight trainers		9D018, 9E018 (development and production software missing for 9A018)
14	anti-submarine trainers, human-rated centrifuges, radar trainers, navigation trainers, armament trainers pilot-less aircraft trainers	IX.e	
	attack trainers, radar target trainers, radar target generators, gunnery training devices, missile launch trainers, target equipment, drone aircraft, mobile training units, training equipment for ground military operations	XXI	
	military scenario simulation	XXI	
	simulators for ML1 or ML2 use	IX.e	
15 hdg	components of:		
	recorders and image processing equipment	XXI	
	cameras	XIII.l	
	image intensifier equipment infrard	XII.f	
	image intensifier equipment not infrared	XXI	
	infrared imaging equipment	XII.f	
	thermal imaging equipment	XXI	
	imaging radar sensor equipment	XI.d	
	countermeasure equipment	XXI	
15 hdg	accessories for		
	recorders and image processing equipment	XXI	
	cameras	XXI	
	image intensifier equipment infrard	XII.f	
	image intensifier equipment not infrared	XXI	
	infrared imaging equipment	XII.f	
	thermal imaging equipment	XXI	
	imaging radar sensor equipment	XI.d	
	countermeasure equipment	XXI	
15.a	recorders and image processing equipment	XXI	
15.b	cameras	XIII.l	
15.c	image intensifier equipment infrard	XII.f	
15.c	image intensifier equipment not infrared	XXI	
15.d	infrared imaging equipment	XII.f	

15.d	thermal imaging equipment	XXI		
15.e	imaging radar sensor equipment	XI.a.3.v		
15.f	countermeasure equipment	XXI		
16	forgings, castings, other unfinished products	IV.i, XIII.l	unspecified	
17 hdg.	components of:			
	diving and underwater swimming	XXI		
	construction equipment military use		0E018 (software missing for 0A018)	
	signature suppression coatings	II.k		
	signature suppression fittings, treatments	XXI		
	Field engineer equipment in combat zone	XXI		
	robots military use, protecting hydraulic lines, or in EMP environment	XXI		
	libraries for military use	XXI		
	nuclear power generating equipment	XXI		
	naval nuclear propulsion	VI.g		
	nuclear propulsion other than naval “nuclear reactors”	XXI		DOE
	signature suppression materials, equipment	II.k		
	simulation of military nuclear reactors	XVI.e		
	mobile repair shops	XXI		
	field generators	XXI		
	containers	XXI		
	ferries, bridges, pontoons	XXI		
	test models	XXI		
	laser protection	XXI		
	fuel cells	XXI		
17.a.	diving and underwater swimming	XIII.l		
17.b	construction equipment military use		0E018 (software missing for 0A018)	
17.c	signature suppression fittings, treatments	XXI		
17.c	signature suppression coatings	II.k		
17.d	Field engineer equipment in combat zone	XXI		
17.e	robots military use, protecting hydraulic lines, or in EMP environment	XXI		
17.f	libraries for military use	XXI		
17.g	nuclear power generating equipment	XXI	2D290, 2E001, 2E002, 2E290	
17.g	naval nuclear propulsion	VI.g		
17.g	nuclear propulsion other than naval “nuclear reactors”	XXI		DOE
17.h	signature suppression equipment	XXI		
17.h	signature suppression materials	II.k		

17.i	simulation of military nuclear reactors	XVI.e	
17.j	mobile repair shops	XXI	
17.k	field generators	XXI	
17.l	containers	XXI	
17.m	ferries, bridges, pontoons	XXI	
17.n	test models	XXI	
17.o	laser protection	XXI	
17.p	fuel cells	XIII.l	
18.a	munitions production ~~II.g, IX.c,X.c, XIII.k,XIV.l,XVIII.c~~		1D018, 1E001 (use technology missing for 1B018); 2D018, 2E001, 2E002, 2E018; 9D001, 9D002, 9D101, 9E001, 9E002, 9E102
18.a	munitions production components		1D018, 1E001 (use technology missing for 1B018); 2D018, 2E001, 2E002, 2E018
18.b	environmental test facilities		1D018, 1E001 (use technology missing for 1B018); 9D001, 9D002, 9D101, 9E001, 9E002, 9E102
19 hdg	components of:19.a,b,c,d,e,f	XVIII.f	
19.a	directed energy weapon laser systems	XVIII.f	
19.b	directed energy particle beam systems	XVIII.f	
19.c	directed energy high power RF systems	XVIII.f	
19.d	detection, identification, defense against a-c	XVIII.f	
19.e	test models	XVIII.f	
19.f	laser systems to cause blindness	XVIII.f	
20 hdg	components and accessories of 20.a,b	XXI	
20.a	cryogenic equipment in a vehicle	XXI	
20.b	superconductive electrical equipment	XXI	

Existing USML Categories, with Cross References to Existing WML Items
(asterisk * in WML column means unilateral U.S. control)
("unspecific" in WML column means USML more specific than WML)

USML Category	General Description	WML Item
I.a	nonautomatic and semi-automatic firearms to caliber .50	1.a
!.b	fully automatic firearms to caliber .50	1.a
1.c	other weapons having special military application	*
1.d	shotguns barrel length less than 18 inches	1.b, 2.a
1.e	silencers, flash suppressors	1.e
1.f	riflescopes	2.c, 5.a
1.g	barrels, cylinders, receivers, breech mechanisms	1 hdg components
1.h	components for	
	1.a,b,d,e,f	1 hdg components
	1.c,g	*
1 h	parts, accessories, attachments	*
1.i	technical data for	
	1.a,b,d,e,f,and h components for 1.a,b,d,e,f	21a, 22a
	1.c and h components for 1.c	*
	1.h parts, accessories, attachments,	*
II.a	guns over .50 caliber	2.a
II.b	flame throwers	2.b unspecific
II.c	launching ordinance other than Category IV	*
II.d	kinetic energy weapon systems	12.a
II.e	signature reduction materials, coatings, equipment	2.a, 17.c, 17.h
II.f	engines for self-propelled guns	*
II.g	production equipment	18.a
II.h	test equipment	*
II.i	autoloading	*
II.j	components of II.a,b,	2 hdg components
II.j	components of II.c, f, h,i	*
II.j	components of II.d	12 hdg components
II.j	components II.e	2 hdg, 17 hdg
II.j	components of II.g	18.a
II.j	parts, accessories, attachments, associated equipment	*
II.k	technical data for II.a,b,d,e,g and j for a.b.d.e.g	21.a, 22.a
II.k	technical data for II.c,f,h,i and j for c,f,h,i	*
III.a	ammunition for I.a,b,d and II.a,d	3.a
III.a	ammunition for I.c	*
III.b	ammunition handling equipment	*
III.c	production equipment	18.a

III.d.1	guidance and control components of III.a	5.a
III.d.2	fuzing components	3.b
III.d.2	target detection	5.b
III.d.2	safing, arming	*
III.d.3	components of III.a for I.a,b,d and II.a,d	3 hdg
III.d.3	components of III.a for I.c or of III.b	*
III.d.3	components of III.c	18.a
III.d.3	parts, accessories, attachments, associated equipment	*
III.e	technical data for:	
	III.a for I.a,b,d and II.a,d and related III.d.3	21.a, 22.a
	III.a for I.c, III.b and related III.d.3	*
	III.c and related III.d.3	21.a, 22.a
	III.d.1, III.d.2 fuzing and target detection	21.a, 22.a
	III.d.2 safing, arming;	*
	III.d.3 parts, accessories, attachments, associated equipment	*
IV.a	bombs, torpedoes, grenades, rockets, mines, depth charges, demolition devices	4.a
IV.a	launchers for IV.a	4.b.2.a
IV.a	blasting caps	*
IV.b	missiles	4.a
IV.b	missile launch vehicles and launchers	4.b.2.a
IV.c	handling, control, activation, detection, discharge, detonation of IV.a,b	4.b.2.a
IV.c	monitoring, protection of IV.a,b	*
IV.d	missile ans space launch power plants	*
IV.e	military explosive excavating devices	*
IV.f	ablative materials	16 unspecific
IV.g	non-nuclear warheads for rockets and guided missiles	*
IV.h	components of IV;a except blasting caps, IV.b, and IV.c except monitoring and protection	4 hdg.
IV.h	components of Iva blasting caps, IV.c monitoring and protection, and IV.d,e,f,g	*
IV.h	parts, accessories, attachments, associated equipment	*
IV.i	technical data for IV;a except blasting caps, IV.b, and IV.c except monitoring and protection and related IV.h components	21.a, 22.a
IV.i	technical data for IV.s blasting caps, IV.c monitoring and protection, IV.d,e,f,g, and related IV.h components	*
IV.i	technical data for parts, accessories, attachments, and associated equipment	*

V.a.1-6	explosives	8.a.1-6
V.a.7-33	explosives	8.a.8-34
V.a.34	DATB	8.a.7
V.a.35	other unspecified explosives	*
V.b.1-7	propellants	8.b.1-7
V.c.1-3	pyrotechnics, fuels, related substances	8.c.2-4
V.c.4	aircraft fuels specially formulated	8.c.1
V.c.5	spherical aluminum powder	8.c.8
V.c.6.i.A	beryllium	8.c.5.a.1
V.c.6.i.B	iron powder	8.c.5.a.2
V.c.6.ii.A	boron	8.c.5.b.2.
V.c.6.ii.B	zirconium, magnesium	8.c.5.b.1
V.c.6.iii	6.i or 6.ii whether or not encapsulated in aluminum, magnesium, zirconium, or beryllium	*
V.c.7	pyrotechnics and pyrophoric materials to control Radiated energy production in infrared spectrum	*
V.c.8	titanium subhydride	8.c.9
V.c.9	fuel thickeners for incendiary munitions; metal stearates and palmates	8.c.6
V.c.10	other unspecified pyrotechnic, fuel and related substance	*
V.d.1	ADN	8.d.1
V.d.2	AP	8.d.2
V.d.3	BDNPN	*
V.d.4-10	oxidizers	8,d,4-10
V.d.11	perchlorates, chlorates, and chromates	*
V.d.12	other unspecified oxidizers	*
V.e.1	AMMO	8.e.1
V.e.2	BAMO	8.e.2
V.e.3	BTTN	8.e.5
V.e.4	FAMAO	8.e.7
V.e.5	FEFO	8.e.8
V.e.6	GAP	8.e.11
V.e.7	HTPB	8.e.12
V.e.8	NENAS	8.e.14
V.e.9	Poly-NIMMO, poly-NMMO	8.e.16
V.e.10	Energetic monomers, plasticizers and polymers	8.e.6
V.e.11	TVOPA	8.e.18
V.e.12	polynitroorthocarbonates	8.e.17
V.e.13	FPF-1	8.e.9
V.e.14	FPF-3	8.e.10
V.e.15	PGN; poly-GLYN	8.e.15
V.e.16	N-methyl-p-nitroaniline	8.f.13
V.e.17	alcohol functionalized poly (epichlorohydrin)	8.e.13

V.e.18	BDNPA	8.e.3
V.e.18	BDNPF	8.e.4
V.e.19	other unspecified binders	*
V.f.1	basic copper salicylate	8.f.1
V.f.2	BHEGA	8.f.2
V.f.3-11	additives	8.f.4-12
V.f.12	3-nitraza-1,5 pantane diisocyanate	8.f.14
V.f.13	organo-metallic coupling agents	8.f.15
V.f.14	polyfunctional axiridine amides	8.f.17
V.f.15-18	additives	8.f.19-22
V.f.19	PCDE	8.f.16
V.f.20	BNO	8.f.3
V.f.21	other unspecified additives	*
V.g.1-8	precursors	8.g.1-8
V.h	technical data for V.a.1-34, V.b.1-7, V.c.1-5, 6.i, ii, 8,9, V.d.1,2,4-10, V.e.1-18, V.f.1-20, V.g.1-8	21.a, 22.a
V.h	technical data for V.a.35, V.c.6.iii, 7, 10, V.d..3,11,12, V.e..19, V.f.21	*
VI.a	vessels for military purposes	9.a.1
VI.b	patrol craft without armor or armament and auxiliary vessels	*
VI.c	significant naval systems for combatant vessels	9.a.1 components unspecific
VI.d	harbor entrance detection devices	9.d submarine nets
VI.e	naval nuclear propulsions plants	17.g
VI.f	components for VI.a	9.a.1
VI.f	components for VI.a,b,c,d	*
VI.f	components for VI.e	17.g
VI.f	parts, accessories, attachments, associated equipment	*
VI.g	technical data for VI.a. VI d submarine nets, VI. e and related VI.f components	21.a, 22.a
VI.g	technical data for VIVI.b,c, remainder of VI.d and related VI.af components	*
VII.a	armed or armored vehicles	6.a
VII.a	military railway trains	*
VII.b	military tanks, gun carriers	6.a
VII.b	combat engineer vehicles, bridge launching vehicles, half tracks	*
VII.c	military trucks, trailers, hoists, or skids to carry I, II, and IV weapons or III and IV articles	6.a
VII.d	military recovery vehicles	6.a
VII.e	amphibious vehicles	6.a

VII.f	engines for VII.a,b,e	*	
VII.g	components for: armed or armored vehicles, military tanks, gun carriers, military trucks, trailers, hoists, or skids to carry I, II, and IV weapons or III and IV articles, military recovery vehicles, amphibious vehicles	6.a	
VII.g	components for: military railway trains, combat engineer vehicles, bridge launching vehicles, half tracks, engines for VII.a,b,e	*	
VII.h	technical data for: armed or armored vehicles, military tanks, gun carriers, military trucks, trailers, hoists, or skids to carry I, II, and IV weapons or III and IV articles, military recovery vehicles, amphibious vehicles	21.a, 22.a	
VII.h	technical data for: military railway trains, combat engineer vehicles, bridge launching vehicles, half tracks, engines for VII.a,b,e	*	
VIII.a	aircraft for military purposes, including helicopters for gunnery, bombing, or rocket or missile launching aircraqft	10.a	
VIII.a	for military purposes,, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	10.b	
VIII.a	drones for military purposes	10.c	
VIII.a	non-expansive balloons for military purposes	*	
VIII.a	aircraft for military purposes, including electronic and other surveillance, refueling, aerial mapping, military liaison, airborne warning and control	*	
VIII.b	military aircraft engines for VIII.a aircraft	10.d	
VIII.b	military hot section components	*	(see 9A001.a and 9A003)
VIII.b	digital engine controls (e.g. FADEC, DEEC)	*	(see 9D003 and 9E003.h)
VIII.c	devices for emergency escape of personnel	10.g	
VIII.c	airborne equipment, including airborne refueling equipment for use with VIII.a aircraft or VIII.b engines	10.e	

VIII.d	launching equipment for VIII.a drones	10.c.2
VIII.d	launching equipment for other VIII.a aircraft	*
VIII.d	recovery equipment for VIII.a	*
VIII.e	inertial navigation systems for military use	*
VIII.f	developmental aircraft, engines, and components for military use	*
VIII.g	ground effect machines for military use	*
VIII.h	components of:	
	aircraft, including helicopters for gunnery, bombing, or rocket or missile launching	10.a
	aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	10.b
	drones for military purposes	10.c
	non-expansive balloons	*
	aircraft for electronic and other surveillance, refueling, aerial mapping, military liaison, cargo carrying or dropping, airborne warning and control	*
	military aircraft engines	10.d
	devices for emergency escape of personnel	*
	airborne equipment, including airborne refueling equipment for use with VIII.a aircraft or VIII.b engines	10.e
	launching and recovery equipment for VIII.a	*
	inertial navigation systems for military use	*
	developmental aircraft, engines, and components for military use	*
	ground effect machines for military use	*
VIII.i	technical data for:	
	aircraft, including helicopters for gunnery, bombing, or rocket or missile launching	21.a, 22.a
	aircraft, including helicopters and lighter-than-air vehicles for reconnaissance, transporting and airdropping troops or military equipment, military training	21.a, 22.a
	drones for military purposes	21.a, 22.a
	non-expansive balloons	*
	aircraft for electronic and other surveillance, refueling, aerial mapping, military liaison, cargo carrying or dropping, airborne warning and control	*
	military aircraft engines	21.a, 22.a
	devices for emergency escape of personnel	*
	airborne equipment, including airborne refueling equipment for use with VIII.a aircraft or VIII.b engines	21.a, 22.a
	launching and recovery equipment for VIII.a	*
	inertial navigation systems for military use	*

	developmental aircraft, engines, and components for military use	*
	ground effect machines for military use	*
IX.a	training equipment for military purposes, including radar trainers, anti-submarine trainers, armament trainers, pilot-less aircraft trainers, navigation trainers, human-rated centrifuges	14
IX.a	training equipment for military purposes, including weapons system trainers, gunnery training devices, target equipment	*
IX.b	simulation devices for USML items I and II	14
IX.b	simulation devices for other USML items	*
IX.c	production equipment	18.a
IX.d	components and accessories for:	
	radar trainers, anti-submarine trainers, armament trainers, pilot-less aircraft trainers, navigation trainers, human-rated centrifuges	14
	weapons system trainers, gunnery training devices, target equipment	*
	simulation devices for USML items I and II	14
	simulation devices for other USML items	*
	production equipment	18.a
IX.d	parts, attachments, associated equipment	*
IX.e	technical data for:	
	radar trainers, anti-submarine trainers, armament trainers, pilot-less aircraft trainers, navigation trainers, human-rated centrifuges and related components and accessories	21.a, 22.a
	weapons system trainers, gunnery training devices, target equipment and related components and accessories	*
	simulation devices for USML items I and II and related components and accessories	21.a, 22.a
	simulation devices for other USML items	*
	production equipment	21.a, 22.a
	parts, attachments, associated equipment	*
X.a.1	body armor	13.d
X.a.2	clothing to protect against IR wavelengths > 900 nm	13.d unspecific
X.a.3	anti-gravity suits	*
X.a.4	pressure suits altitudes > 55,000 ft	13.d unspecific
X.a.5	diving suits	*
X.a.6	helmets compatible with communications or optical devices	13.c unspecific
X.a.7	goggles protection against lasers or thermal flashes	*

X.b.1	shelters against ballistic shock or impact	*
X.b.2	shelters against nuclear, biological or chemical contamination	*
X.c	production equipment	18.a
X.d	components of body armor and unspecific protective clothing and helmets	13.d
X.d	components of production equipment	18.a
X.d	components of anti-gravity suits, diving suits, goggles, shelters, and specific protective clothing, pressure suits, and helmets	*
X.d	parts, accessories, attachments, associated equipment	*
X.e	technical data for body armor, production equipment, and unspecific protective clothing and helmets	21.a, 22.a
X.e	technical data for anti-gravity suits, diving suits, goggles, shelters, and specific protective clothing, pressure suits, and helmets	*
X.e	technical data for parts, accessories, attachments, and associated equipment	*
XI.a.1	underwater sound detection equipment	9.c
XI.a.1	underwater sound identification, tracking and weapons control equipment	*
XI.a.2	underwater acoustic countermeasures	11.a Note d
XI.a.3	radar	*
XI.a.4	electronic combat equipment, e.g., countermeasures	11.a Note a,c
XI.a.5	automated command and control systems	11.a Note j
XI.a.5	navigation and identification equipment	11.a Note f,g
XI.a.5	other command, control and communications systems	*
XI,a,6	data processing security equipment using ciphering processes	11.a Note e
XI.a.6	other computers for military application of use with any USML article	*
XI.a.7	experimental or developmental electronic equipment	*
XI.b	electronic equipment for surveillance and monitoring of electro-magnetic spectrum for military intelligence or security purposes	11.a Note c
XI.b.1	frequency agile tubes	11.a Note b
XI.b.1	other electronic equipment using cryptographic techniques to generate the spreading code for spread spectrum or hopping code for frequency agility	*
XI.b.2	equipment using burst techniques for intelligence, security or military purposes	*
XI.b.3	equipment to suppress compromising emanations of information-bearing signals	*

XI,c	components of:	
	underwater sound detection equipment	9.c
	underwater sound identification, tracking and weapons control equipment	*
	underwater acoustic countermeasures	11.a
	radar	*
	electronic combat equipment, e.g., countermeasures	11.a
	automated command and control systems	11.a
	navigation and identification equipment	11.a
	other command, control and communications systems	*
	data processing security equipment using ciphering processes	11.a
	other computers for military application of use with any USML article	*
	experimental or developmental electronic equipment	*
	electronic equipment for surveillance and monitoring of electro-magnetic spectrum for military intelligence or security purposes	11.a
	frequency agile tubes	11.a
	other electronic equipment using cryptographic techniques to generate the spreading code for spread spectrum or hopping code for frequency agility	*
	equipment using burst techniques for intelligence, security or military purposes	*
	equipment to suppress compromising emanations of information-bearing signals	*
XI.c	parts, accessories, attachments, associated equipment	*
XI.d	technical data for:	
	underwater sound detection equipment	21.a, 22.a
	underwater sound identification, tracking and weapons control equipment	*
	underwater acoustic countermeasures	21.a, 22.a
	radar	*
	electronic combat equipment, e.g., countermeasures	21.a, 22.a
	automated command and control systems	21.a, 22.a
	navigation and identification equipment	21.a, 22.a
	other command, control and communications systems	*
	data processing security equipment using ciphering processes	21.a
	other computers for military application of use with any USML article	*
	experimental or developmental electronic equipment	*
	electronic equipment for surveillance and monitoring of electro-magnetic spectrum for military intelligence or	

	security purposes	21.a, 22.a
	frequency agile tubes	21.a, 22.a
	other electronic equipment using cryptographic techniques to generate the spreading code for spread spectrum or hopping code for frequency agility	*
	equipment using burst techniques for intelligence, security or military purposes	*
	equipment to suppress compromising emanations of information-bearing signals	*
	parts, accessories, attachments, associated equipment	*
XII.a	fire control systems	5
	gun and missile tracking systems	5.b
	gun or missile guidance systems	11.a Note g
	gun range equipment	5.b
	gun position, height finders, spotting instruments	*
	gun laying equipment	5.b.2.a, 5.a
	aiming devices (electronic, optic, and acoustic)	*
	bomb sights	2.c, 5.a unspecific
	bombing computers	5.a
	military television sighting and viewing units	*
	periscopes	*
XII.b	lasers directed energy weapons	19.a
	other lasers for military application	*
XII.c	image intensifier equipment	15.c
	infrared or thermal imaging equipment	15.d
	other infrared focal plane array detectors for military use,	*
	other night sighting equipment for military use	*
	image intensification tuges	*
	other infrared, visible, and ultraviolet devices for military application	*
XII.d	inertial platforms and sensors for weapons	*
	guidance systems	11.a Note g
	control systems	5.a
	stabilization systems	*
	astro compasses, star trackers, military accelerometers and gyros	*
XII.e	components of and accessories for: fire control systems, gun and missile tracking systems, gun range equipment, gun laying equipment, bomb sights, bombing computers, weapon control systems	5 hdg
XII.e	components of and accessories for: image intensifier equipment, infrared or thermal imaging equipment	15.hdg

XII.e	other accessories	*
XII.e	components of:	
	gun or missile guidance systems, guidance systems	11.hdg
XII.e	components of	
	lasers directed energy weapons	19 hdg
XII.e	components of:	
	gun position, height finders, spotting instruments	*
	aiming devices (electronic, optic, and acoustic)	*
	military television sighting and viewing units	*
	periscopes	*
	other lasers for military application	*
	other infrared focal plane array detectors for military use,	*
	other night sighting equipment for military use	*
	image intensification tuges	*
	other infrared, visible, and ultraviolet devices for military application	*
	inertial platforms and sensors for weapons	*
	stabilization systems	*
	astro compasses, star trackers, military accelerometers and gyros	*
XII.e	:parts, attachments, associated equipment	*
XIII.a	cameras, photographic equipment, film processing equipment, and components therefor for military use	15.b
XIII.a	other processing equipment photo interpretation, stereoscopic plotting, photogrammetry equipment and components therefor	*
XIII.b	equipment using ciphering processes	11.a Note e
	keyloader, key management equipment	11.a Note f
	components of equipment using ciphering processes	11.hdg
	components of keyloader, key management equipment	11 hdg
XIII.b	ancillary equipment and software for ciphering processes, keyloader, or key management	*
XIII.b	Military Information Security Assurance Systems, other cryptographic devices and software for military application, tracking, telemetry, and controls encryption and decryption, spreading or hopping codes for spread spectrum, military cryptanalytic systems, multi-level security or user isolation, ancillary equipment for the above, components for the above, and software for the above functions	*
XIII.c.1	self-contained closed and sem-closed (rebreathing) diving	

	and underwater breathing apparatus	17.a.1
XIII.c.2	components for conversion of open circuit apparatus to military use	17.a.2
XIII.c.2	parts for conversion of open circuit apparatus to military use	*
XIII.c.3	articles for military use with self-contained diving and underwater swimming apparatus	17.a.3
XIII.d	carbon/carbon billets and preforms	16 unspecific
XIII.e	armored plate and components	13.a
XIII.e	armored plate parts and accessories	*
XIII.e	ballistic protection and components	6.b.2.b
XIII.e	ballistic protection parts and accessories	*
XIII.e	other armor, reactive armor, components, parts, and accessories	*
XIII.f	structural materials for defense articles	16 unspecific
XIII.g	smoke equipment and components	2.b
XIII.g	smoke equipment parts and accessories	*
XIII.g	decoys and components	4.b
XIII.g	decoys parts and accessories	*
XIII.g	silent bearings and components	9.g
XIII.g	silent bearings parts and accessories	*
XIII.g	special paints, obscuration equipment and simulators, and other concealment and deception equipment, and components, parts and accessories therefor	*
XIII.h	fuel cells	17.p
XIII.h	other energy conversion devices	*
XIII.i	metal embrittling agents	*
XIII.j	measurement of system signatures for detection of defense articles	*
XIII.k	production equipment	18.a
XIII.l	technical data for	
	XIII.a cameras, photographic equipment, film processing equipment, and components therefor for military use	21.a, 22.a
	XIII.b equipment using ciphering processes	21.a, 22.a
	keyloader, key management equipment	21.a, 22.a
	components of equipment using ciphering processes	21.a, 22.a
	components of keyloader, key management equipment	21.a, 22.a
	XIII.c.1 self-contained closed and sem-closed (rebreathing) diving and underwater breathing apparatus	21.a, 22.a
	XIII.c.2 components for conversion of open circuit apparatus to military use	21.a, 22.a
	XIII.c.3 articles for military use with self-contained diving and underwater swimming apparatus	21.a, 22.a
	XIII.d carbon/carbon billets and preforms	21.a, 22.a unspecific

	XIII.e armored plate and components	21.a, 22.a
	XIII.f structural materials for defense articles	21.a, 22.a unspecific
	XIII.g smoke equipment and components	21.a, 22.a
	XIII.e ballistic protection and components	21.a, 22.a
	XIII.g decoys and components	21.a, 22.a
	XIII.g silent bearings and components	21.a, 22.a
	XIII.h fuel cells	21.a, 22.a
	XIII.k production equipment :	21.a, 22.a
XIII.l	technical data for	
	XIII.a other processing equipment photo interpretation, stereoscopic plotting, photogrammetry equipment and components therefor	*
	XIII.b ancillary equipment and software for ciphering processes, keyloader, or key management	*
	XIII.b Military Information Security Assurance Systems, other cryptographic devices and software for military application, tracking, telemetry, and controls encryption and decryption, spreading or hopping codes for spread spectrum, military cryptanalytic systems, multi-level security or user isolation, ancillary equipment for the above, components for the above, and software for the above functions	*
	XIII.c.2 parts for conversion of open circuit apparatus to military use	*
	XIII.e armored plate parts and accessories	*
	XIII.e ballistic protection parts and accessoris	*
	XIII.e other armor, reactive armor, components, parts, and accessories	*
	XIII.g smoke equipment parts and accessories	*
	XIII.g decoys parts and accessories	*
	XIII.g silent bearings parts and accessories	*
	XIII.g special paints, obscuration equipment and simulators, and other concealment and deception equipment, and components, parts and accessories therefor	*
	XIII.h other energy conversion devices	*
	XIII.i metal embrittling agents	*
	XIII.j measurement of system signatures for detection of defense articles	*
XIV.a.1	CW nerve agents	7.b.1
XIV.a.2	amiton	*
XIV.a.3	CW vesicant agents	7.b.2

XIV.a.4	CW incapacitating agents	7.b.3
XIV.b	biological agents	7.a
XIV.c.1-4	CW precursors	7.c.1-4
XIV.c.5	DC	*
XIV.d	riot control agents	7.d
XIV.d.1	DM	7.d.5
XIV.d.2	CA	7.d.1
XIV.d.3	CN	7.d.3
XIV.d.4	CR	7.d.4
XIV.d.5	CS	7.d.2
XIV.d.6-13	other specific riot control agents	*
XIV.e	CW defoliants	7.b.4
XIV.f.1	dissemination of a.1,3,4, b, d.1-5, e and components	7.e
XIV.f.1	dissemination of a.2, d.6-13 and components	*
XIV.f.2	detection or identification of a.1,3,4, b and components	7.g
XIV.f.2	detection or identification of a.2 and components	*
XIV.f.3	sample collection and processing of chemical and biological agents and components	*
XIV.f.4,5	protection against a.1,3,4,5, b and components	7.f.1
XIV.f.4,5	protection against a.2 and components	*
XIV.f.6	decontamination a.1,3,4,5, b and components	7.f.2
XIV.f.6	decontamination a.2 and components	*
XIV.g	antibodies, polynucleoides	*
XIV.g	biopolymers	7.h
XIV.g	biocatalysts	7.i.1
XIV.h	medical countermeasures	*
XIV.i	simulation CBW employment	14 unspecific
XIV.i	simulation CBW development	*
XIV.i	modeling CBW development or employment	*
XIV.j	test facilities	*
XIV.k	equipment for destruction of a, b and components, parts, accessories, and attachments	*
XIV.l	production equipment	18.a
XIV.m	technical data for: a.1,3,4, b, c.1-4, d.1-5, e, f.1 for a.1,3,4, b, d.1-5, e and components, f.2 for a.1,3,4, b and components, f.4,5 for a.1,3,4, b and components, f.6 for a.1,3,4, b and components, g bioploymers, biocatalysts, l production equipment	21.a, 22.a
XIV.m	technical data for: a.2, c.5, d.6-13, f.1 for a.2, d.6-13,	

	f.2 for a.2, f.3, f.4,5 for a.2, f.6 for a.2, g. antibodies, polynucleoides, h medical countermeasures, i modeling and simulation CBW development and employment, j test facilities, and k equipment for destruction of a, b and components, parts, accessories, and attachments	*
XV.a	spacecraft	*
XV.b	ground control stations	*
XV,c	Global Positioning System receiving equipment	*
XV.d	radiation-hardened microcircuits	*
XV.e	components. Parts, accessories, attachments, associated equipment for a,b,c,d	*
XV.f	technical data for a,b,c,d,e	*
XVI.a	nuclear weapons or explosvie devices design, development or fabrication `	*
XVI.b	military nuclear reactor simulators	17.I
XVI.b	other devising, carrying out, evaluating, or modeling nuclear reactors	*
XVI.c	nuclear radiation detection and measurement	* (see 1A999.a)
XVI.d	military nuclear reactor simulator components	17
XVI.d	other components of a,b,c	*
XVI.d	parts, accessories, attachments, associated equipment	*
XVI.e	software for determining the effects of nuclear weapons	21.b.3
XVI.e	technical data for military nuclear reactor simulators and components	21.a, 22.a
XVI.e	other technical data for a,b,c,d	*
XVII.a	classified articles, technical data, defense services	1-22 unspecific
XVIII.a..1	laser systems to cause permanent blindness to unenhanced vision, i.e., to the naked eye or to the eye with corrective eyesight devices	19.f
XVIII.a.1	other laser systems to cause blindness	*
XVIII.a.2	laser systems for destruction or effecting mission-abort of a target	19.a
XVIII.a.2	laser systems for degradation of a target	*
XVIII.a.3	particle beam systems capable of destruction or effecting mission-abort of a target	19.b
XVIII.a.3	particle beam systems for degradation of a target	*
XVIII.a.4	particle accelerators	*

XVIII.a.5	high power RF systems for destruction or effecting mission-abort of a target	19,c
XVIII.a.5	high power RF systems for degradation of a target	*
XVIII.a.6	high pulsed power or high average power radio frequency beam transmitters to disable electronic circuitry at distant targets	*
XVIII.a.7	prime power generation, energy storage, switching, power conditioning,, thermal management or fuel handling equipment	*
XVIII.a.8	target acquisition or tracking systems	5.b
XVIII.a.9	space qualified laser radar or Light Detection and Ranging (LIDAR) equipment	*
XVIII.a.10	beam-handling, propagation or pointing equipment	*
XVIII.a.11	equipment with rapid beam slew capability for rapid multiple target operations	*
XVIII.a.12	negative ion beam funneling equipment	*
XVIII.a.13	equipment for controlling and slewing a high-energy ion beam	*
XVIII.b	detection or identification or defense against: laser systems for destruction or effecting mission-abort of a target; particle beam systems capable of destruction or effecting mission-abort of a target; high power RF systems for destruction or effecting mission-abort of a target	19.d
XVIII.b	detection or identification or defense against: laser systems for degradation of a target; particle bean systems for degradation of a target; high power RF systems for degradation of a target; a.1, 4, 6-13	*
XVIII.c	production equipment for: laser systems for destruction or effecting mission-abort of a target; particle beam systems capable of destruction or effecting mission-abort of a target; high power RF systems for destruction or effecting mission-abort of a target; laser systems to cause permanent blindness to unenhanced vision, i.e., to the naked eye or to the eye with corrective eyesight devices; and detection, identification. or defense against or test models therefor and components therefor	18.a
XVIII.c,e	production equipment, and components, for: other laser systems to cause blindness;	

	laser systems for degradation of a target; particle beam systems for degradation of a target; high power RF systems for degradation of a target; and detection, identification. or defense against or test models therefor and components therefor	*
XVIII.c, e	production equipment, and components, for: a.4, 6-13 and detection, identification. or defense against or test models therefor and components therefor	*,
XVIII.c, e	production equipment, and components, for: test and evaluation equipment other than test models, parts, accessories, attachments, associated equipment	*
XVIII.d	test models for: laser systems for destruction or effecting mission-abort of a target; particle beam systems capable of destruction or effecting mission-abort of a target; high power RF systems for destruction or effecting mission-abort of a target; laser systems to cause permanent blindness to unenhanced vision, i.e., to the naked eye or to the eye with corrective eyesight devices	19.e
XVIII.d	test models for: other laser systems to cause blindness; laser systems for degradation of a target; particle bean systems for degradation of a target; high power RF systems for degradation of a target; a.4, 6-13	*
XVIII.d	other test and evaluation equipment for a.1-13	*.
XVIII.e	components of laser systems for destruction or effecting mission-abort of a target; particle beam systems capable of destruction or effecting mission-abort of a target; high power RF systems for destruction or effecting mission-abort of a target; laser systems to cause permanent blindness to unenhanced vision, i.e., to the naked eye or to the eye with corrective eyesight devices; and detection, identification. or defense against or test models therefor	19 hdg
XVIII.e	components of	

	other laser systems to cause blindness; laser systems for degradation of a target; particle bean systems for degradation of a target; high power RF systems for degradation of a target; and detection, identification. or defense against or test models therefor		*
XVIII.e	components of: a.4, 6-13; and detection, identification. or defense against or test models and other test and evaluation equipment therefor	*	
XVIII.e	parts, accessories, attachments, and accessories	*	
XVIII.f	technical data for: laser systems for destruction or effecting mission-abort of a target; particle beam systems capable of destruction or effecting mission-abort of a target; high power RF systems for destruction or effecting mission-abort of a target; laser systems to cause permanent blindness to unenhanced vision, i.e., to the naked eye or to the eye with corrective eyesight devices; and detection, identification. or defense against, test models, or production equipment therefor, and components therefor	21.a, 22.a	
XVIII.f	technical data for: other laser systems to cause blindness; laser systems for degradation of a target; particle bean systems for degradation of a target; high power RF systems for degradation of a target; and detection, identification. or defense against or test models, or production equipment therefor, and components therefor	*	
XVIII.f	technical data for: a.4, 6-13; and detection, identification. or defense against or test models and other test and evaluation equipment therefor; parts, accessories, attachments, and accessories	*	
XX.a	submersible vessels	*	
XX.b	swimmer delivery vehicles	*	
XX.c	equipment, components, parts, accessories, attachments	*	
XX.d	technical data for a,b,c	*	

December 6, 2011

To: DDTCResponseTeam@state.gov
Publiccomments@bis.doc.gov

From: Bill Root, waroot23@gmailcom, tel. 301 987 6418

Subject: ITAR Amendments - Category VIII RIN 1400-AC96
EAR Revisions - Control of Aircraft and Related Items RIN 0694-AF36

This supplements my November 27 comments to suggest additional clarifications of individual items in the two proposed subject rules.

A. "Military" The Category VIII proposal requests public suggestions for objective language to replace subjective terms such as "military." The one example given was proposed "unarmed military UAVs" (VIII.a.6). My November 27 comments recommended that this be changed to "armored UAVs" and "UAVs equipped with mounts for weapons." The following suggests ways to avoid the ambiguous use of "military" in other proposed VIII and 9x610 items:

1. Existing Category VIII.a includes "surveillance", and "reconnaissance" aircraft "specifically designed, modified, or equipped for military purposes." Existing WML 10.b controls aircraft "specially designed or modified for military use, including military reconnaissance." Proposed VIII.a.7 would control "military intelligence, surveillance, and reconnaissance aircraft." Proposed 9A610.a would control "military aircraft" "specially designed " for a "military use," including "observation" aircraft. A civil aircraft with no discernible features to identify it for intelligence, surveillance, reconnaissance, or observation use by the military could be used for these purposes. There may be objective features, such as larger windows or camera equipment, which would improve aircraft use for these functions..Such features are not particularly significant and are probably common to aircraft used for civil such purposes. If there is, nevertheless, a need to continue to control such aircraft, it is recommended that this be done in 9A610.a, rather than VIII.a, and by using objective characteristics rather than "military" or "specially designed" or "military use."

2. Proposed 9A610.a would control "Military Aircraft" "specially designed" for a military use not enumerated in VIII.a. In addition to "observation aircraft," the Note would include in such "Military Aircraft":
   a, Trainer aircraft. Objective language might be "Aircraft for training military personnel other than those described in VIII.a.3." Similarly, "military aircraft instrument flight trainers that are not specially designed to simulate combat" in 9A610.k might be changed to "aircraft instrument training for military personnel not simulating combat."
   b. Cargo aircraft. Most aircraft used to transport military cargo, e.g., C-130, do not differ from those used to transport civil cargo. Those which differ should be

described using objective language (e.g., size of cargo door and/or tonnage lifting capacity).

c Utility fixed-wing aircraft. One cannot suggest objective language to describe a particular military function without knowing the function which prompts inclusion of this new sub-item in the proposal. Words to this effect do not now appear in either the USML or the WML.This may be a subset of surveillance, etc. or cargo aircraft.

d. Military helicopters. This would clearly overlap not only VIII.a.4 attack helicopters but also many other VIII.a aircraft sub-items. The definition of "aircraft" in 15 CFR 772.1 includes helicopters.

e. Military non-expansive balloons and other lighter-than-air aircraft. One cannot suggest objective terminology to replace "military" as a modifier for non-expansive balloons and other lighter-than-air aircraft without knowing what military uses they have. This may be a subset of surveillance, etc., aircraft.

f. Unarmed military aircraft manufactured before 1956. This might be revised to read "Aircraft described in VIII.a or other portions of 9A610.a if unarmed and manufactured before 1956."

g. "Non-military" UAVs in ECCN 9A012 could be replaced by UAVs "other than those described in VIII.a or ECCN 9A120 (which should be renumbered 9A112).

3. WML 10.b, c, d include the phrase "specially designed or modified for military use." This is arguably applicable to all WML 10 sub-items, because the same words appear in the item heading. Proposed Category VIII did a fine job in replacing "military use" with objective descriptions for all but the few VIII sub-items noted above. This indicates the possibility of replacing "military use" with objective descriptions in WML 10 and other WML items. The United States is obligated to comply with WML controls. Therefore, at least to avoid inconsistencies, the United States will have to propose many WML changes as a pre-requisite to putting proposed USML and CCL changes into effect. .

4. There may already be sufficient objective wording in 9A610.g (crash helmets, etc.) to permit deletion of "Military" and in 9A610.i (controlled opening jumps) to permit deletion of "specially designed for military use."

5. In 9A610.h, if there is a need to control any parachutes or paragliders, "specially designed or modified for military use" could be replaced by objective characteristics defining that need. The remainder of that sub-item suggests that the need might relate to altitude. In any event, "designed or modified for military high altitude" in describing controlled equipment for parachutists should be replaced by higher than a specific altitude.

6. Expansion of WML 8.a.2.f,g and CCL 8A002.f , g to cover ground effect machines would permit deletion of "specially designed for use by a military" in 9A610.j.

B. Launching Equipment. The launching portion of proposed VIII.d as it relates to VIII.a.5,6

overlaps the launching portion of 9A610.l as it relates to VIII.a.5,6.
C. To make 9A610.l (handling UAVs) effective requires amendment of 9A115. That ECCN is identified as subject to DDTC jurisdiction, which is inconsistent with BIS jurisdiction proposed for 9A610.l. 9A115 controls transport as well as handling, control, activation or launching of UAVs and covers missiles as well as UAVs. Re launching, see B above. It is suggested that 9A610.l include transport and delete launching of UAVs and that the UAV portion of 9A115 be limited to launching. Further 9A115 revisions may be required in connection with future proposed Category IV and related 600 series ECCNs. The ambiguous phrase "designed or modified" in MTCR 12.A.1 and 12.A.2 (and 9A610.l and 9A115) could probably be deleted.

D. 9A610.m (UAV altimeters) uses wording similar to that in 7A106. However, 7A106 is limited to missiles and omits portions of MTCR 11.A.1 for UAVs. It also omits radar and laser radar systems other than altimeters. On the other hand, 7A106 does cover laser radar altimeters and radar systems other than altimeters, which are omitted from 9A610.m . It is recommended that 9A610.m cover all of MTCR 11.A.1 as it relates to UAVs. Consideration of revisions of 7A106 should await future proposed Category IV and related 600 series ECCNs. The phrase "designed or modified" in MTCR 11.A.1 (and 9A610.m and 7A106) could probably be deleted.

E. 9A610.n (UAV flight control) uses wording similar to that in 7A116 and MTCR 10.A.1 and 10.A.2. However, 7A116 is limited to missiles, omitting portions of 10.A.1 and 10.A.2 for UAVs. 7A116 revisions may be required in connection with future proposed Category IV and related 600 series ECCNs. The phrase "designed or modified" in MTCR 10.A.1 and 10.A.2 (and 9A610.n and 7A116) could probably be deleted.

F. Inertial navigation systems are now controlled by VIII.e if specifically designed, modified, or configured for military use. Proposed VIII.e is "reserved." MTCR items corresponding to VIII.e (and XII.d, which is referred to in VIII.e) are 9.A.1-8. There are no corresponding WML items. MTCR 9.A.1 is now covered by 7A103.b, which is annotated as subject to DDTC jurisdiction. MTCR 9.A.2-9 controls are now covered by ECCNs 7A001-4, and 7A101, 102, 103.a, 103.c, 104, and 107. Of these, the only ECCN now annotated as partially subject to DDTC jurisdiction is 7A003 if specifically designed, modified, or configured for military use. It is recommended that annotations that portions of 7A003 and 7A103 are subject to DDTC jurisdiction be deleted. There does not appear to be a need to add an inertial navigation sub-item to 9A610, since the CCL already describes the MTCR controls.

G. Software for software. WML 21.a controls software for software specified by the WML. Neither existing nor proposed VIII.i controls such software. Similarly, proposed 9D610 does not do so.

H. Technology for software WML 22.a and 9E910 control technology for specified software. However, neither existing nor proposed VIII.i do so.

I Production software and technology 9B610.a would control equipment for the production of Category VIII as well as 9A610 items. However, 9D610 and 9E610 would not control software

and technology for production of Category VIII items, although “production facilities” in 9B610.c is defined to include software integrated into production installations. It is unclear whether or not “directly related” in Category VIII.i is intended to control software or technology for production of Category VIII.a through h. It is recommended that the agency having jurisdiction for equipment for the production of munitions on the USML also have jurisdiction for production software and technology.

EaglePicher™
Technologies, LLC
An OMG Company

[redacted]

December 15, 2011

Ms. Ellen Tauscher
Under Secretary,
Arms Control and International Security
US Department of State
Washington, DC 20522-0112

Subject: ITAR Amendments – Category VIII

Reference: Department of State 22 CFR Part 121 RIN 1400-AC96 (Public Notice 7673)

Dear Ms. Tauscher:

In response to the above reference Public Notice, EaglePicher Technologies LLC., (EPT) requests that consideration be given to the following comments regarding the impact of all 28 VDC and 270 VDC Lithium-Ion batteries being included on the United States Munitions List (USML).

EPT is in disagreement with the overly broad approach the State Department is proposing within the public notice. The Department of State is unilaterally proposing the migration of all Lithium-Ion batteries that operate at both 28VDC and 270VDC to the jurisdiction of the State Department, when many of these items are currently commercially designed and controlled under the Department of Commerce's Export Administration Regulations (EAR). The following excerpt from the public notice covers the proposed language in Section 121.1, Category VIII (h)(13) and states "Aircraft Lithium-Ion batteries that provide 28VDC or 270 VDC" are to be added to the USML. EPT feels that this broad brush approach impacts many commercially designed efforts and will harm our ability to compete globally. EPT is in agreement that items determined by the State Department to be "specially designed" for low observable featured aircraft should be controlled, if not already controlled.

As you are aware, current policy in the determination of a defense article requires the manufacturer to review/analyze whether or not the article has been specially designed, modified, configured, adapted, etc. for a military application. Additionally, evaluation needs to be conducted concerning whether or not the article/technology has "significant military or intelligence applicability". As such, and when those determinations are made, it is EPT's contention that all Lithium-Ion aircraft batteries that provide 28VDC or 270VDC are not "inherently military in character" and therefore do not require the control regimented under the ITAR. EPT requests that the application of the 28VDC and 270VDC Lithium-Ion battery criteria be applied only to those aircraft deemed to be "specially designed" or those noted as containing low observable features. The characters of this power supply are not inherently toward military applications, and therefore; should not be on the United States Munitions List unless specifically designed for a military application.

If you should have any questions concerning the above information, please do not hesitate to contact me by phone at 417-623-8000 ext 387 or by email at brian.hutson@eaglepicher.com.

Respectfully,

Brian L. Hutson
Manager, Contracts and Export Control
Empowered Official

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1. International Traffic in Arms Regulation Update

As a follow up of the briefing given by US representatives to Segredifesa on November 28th, 2011, the POLES Industrial Group, created under the leadership of AIAD, met in Rome to analyze the proposed changes and appreciated the spirit of the update aimed to move some of defense articles from USML to EAR, so simplifying and speeding the process for export authorizations.

Notwithstanding the above, the Italian Industry representatives, in agreement with Segredifesa, deem that some clarifications and explanations would be needed to better explain a few issues, so simplifying the relationship both with the US Government and with US Industry.

Find therefore, herewith enclosed, a few questions and some comments to the proposed ITAR update:

a. It seems that on the new regulations not all the equipment named in the ML10 from Wassenaar Agreement are mentioned. We assume they will be listed as part of the new 600series controls in Category 9 of the CCL.
   Specifically we refer to: **ML10.g**: *"Military crash helmets and protective masks, and specially designed components therefor, pressurised breathing equipment and partial pressure suits for use in "aircraft", anti-g suits, liquid oxygen converters used for "aircraft" or missiles, and catapults and cartridge actuated devices, for emergency escape of personnel from aircraft"* **and ML10.i** *"equipment specially designed or modified for military use for controlled opening jumps at any height, including oxygen equipment."*
b. Whether a component employed in a defense article would be installed in a major assembly qualified as EAR, would it maintain the original categorization in the USML or should it be moved to the EAR list?
c. We deem it would be appropriate to include in the proposed test some additional information and/or explanations (as in the case of the "Wassenaar Agreement"ML10 notes – see Attachment "A") to avoid or minimize doubts or misinterpretations both by local and international Industry.
d. Is §121.3(a)(2) meant to include in ITAR control also European military aircraft such as Eurofighter, NH90, and EH-101?

   (to clarify, a made in Italy aircraft, falling under definition of category VIII remains a foreign made product regulated by Italian Arms Export law, not falling under ITAR unless imported in US)
e. In Category VIII §(f) we suggest to modify the text as follows: "…attachments therefore developed ***entirely*** *under a contract with the US Department of Defence"*.This to underline that ITAR rules apply only if the system is entirely financed with DoD funds
f. We suggest finally to include in the proposed changes an additional §(j) stating that:

   (j) Items belonging to other USML categories (e.g. chapter XV for microcircuits)

   - *that are embedded in an aircraft or part of it, as per the definitions above,*
   - *that, as concern the aircraft or part of it as final assembly, will be transferred to Commerce Control List and under jurisdiction of US Dept. of Commerce, to a new ECCN 9Axxx to be defined*

- *that are not separable from finished product, without prejudice of function of part or of the entire system,*

will be treated under the same jurisdiction of the Commerce Control List.

The purpose of this is to have coherency of US Export Control reform that is affecting several categories of USML and shall be read with consistency in order to handle the overlapping areas of USML items that embark other USML items whenever this are eligible to be transferred under control of CCL.

g. It is understood that "spare parts" of an aircraft, when replaced one-to-one, will not be the subject of a specific export license, but will be treated with exemption, probably because the license for the top assembly (the aircraft) cover the replacement parts, too. Remains to be clarified the issue on warehousing that may affect running and future programs (e.g. JSF) and to assess if WDA (Warehouse Distribution Agreement) can be envisaged.

h. Access to information system: is it foreseen the access to licensing system by foreign company, to prepare, submit and track Re-Export licenses (per ITAR § 123.9(c)) in a similar fashion of today's Dept. of Commerce tool SNAP-R system ?

Attachment “A”

General Comments

“The list does not apply to "aircraft" or variants of those "aircraft" specially designed for military use and which are one or more of the following:

- *Not configured for military use and not fitted with equipment or attachments specially designed or modified for military use; and*
- *Certified for civil use by the civil aviation authority in a participating state.*
- *Aero-engines designed or modified for military use which have been certified by civil aviation authorities in a participating state for use in "civil aircraft", or specially designed components therefore;*
- *Reciprocating engines or specially designed components therefore, except those specially designed for unmanned airborne vehicles.*
- *On specially designed components and related equipment for non-military "aircraft" or aero-engines modified for military use applies only to those military components and to military related equipment required for the modification to military use.”*

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67207

Regulatory Policy Division,
Bureau of Industry and Security,
U.S. Department of Commerce,
Room 2099B,
14th Street and Pennsylvania Avenue NW.,
Washington, DC 20230.

Refer to RIN 0694–AF36

Dear Sir:

This letter is in response to the proposed USML categories suggested by the Department of State and Department of Commerce relative to Export Reform. Hawker Beechcraft, Inc. has reviewed the proposed USML definitions and have the following comments and questions regarding proposed changes to USML VIII (Aircraft and related items), in particular categories VIII(a)(3); VIII(h)(6); and VIII(h)(16).

The proposed changes include a revised definition of "aircraft" as it relates to USML Category VIII.

1. VIII(a)(3) Jet powered trainers used to train pilots for fighter, attack, or bomber aircraft.

    - **Please clarify what the term "jet powered" is intended to include/exclude. Is it intended to refer only to what most people think of as a "jet," which is an aircraft powered with a gas turbine engine without a propeller? Or, does it also include all turbine-engine airplanes, including turbojets, turbofans, and turboprops, which may use turbine engines to turn a propeller. The question has particular relevance to our company as the Pratt & Whitney PT-6 engine used in our T6 military trainer aircraft is a turbine and is a turboprop.**

2. VIII(h)(6) Aircraft components, parts, accessories, attachments, and associated equipment as follows: Bomb racks, missile launchers, missile rails, weapon pylons pylon-to-launcher adapters, UAV launching systems, and external stores support systems and parts and components "specially designed" therefor.

- **Is "external stores support systems" intended to include external fuel tanks, or is this intended only to cover external stores for weapons carriage and release?**

3. VIII(h)16) Fire control computers, mission computers, vehicle management computers, integrated core processers, stores management systems, armaments control processors, aircraft-weapon interface units "specially designed" for aircraft.

    - **Does the term "mission computers" include navigation computers and avionics?**

    - **What is the definition of "integrated core processor" and what does it include?**

    - **Do "stores management systems" include emergency jettison capabilities for external fuel tanks?**

In the event you have any questions regarding the content of this letter, please do hesitate to contact us.

Sincerely,

HAWKER BEECHCRAFT, INC.

Bobbi Erb

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The Honorable Ellen Tauscher
Under Secretary, Arms Control and International Security
U.S. Department of State
2201 C Street NW
Washington, D.C. 20520

December 20, 2011

Subject: ITAR Amendments—Category VIII

Reference: Public Notice: 7673

Dear Under Secretary Tauscher:

The General Electric Company, acting through its GE Aviation business unit (GE), submits the following comments for the referenced proposed changes to 22 CFR Part 121. GE appreciates the Department's effort to remove broad-based controls on generic aircraft parts and components. By far, this is the most significant Export Control Reform accomplishment to-date and will greatly improve our ability to focus our compliance efforts on protecting critical DoD technologies.

Our comments for §121 fall into 3 general categories:

- Suggested changes to improve the §121.3 definition of "Aircraft";
- Although the new VIII represents a more positive list, there are opportunities to add further clarity; and
- In order to fully evaluate the impact of these changes, it is essential to understand the full and complete definition of "Specially Designed" in context.

SPECIFIC COMMENTS

COMMENTS FOR SUPPLEMENTARY INFORMATION SECTION

GE recommends adding clarification concerning the impact of the rule change on existing Commodity Jurisdiction rulings. The language should be consistent with the EAR counterpart proposed rule change (RIN 0694-AF36), published November 7, 2011.

COMMENTS AND SUGGESTED CHANGES TO §121.3

For readability, GE proposes integrating §121.3 into USML Category VIII. As written, the reader is required to alternate between USML Category VIII text and §121.3 to determine applicability of the regulation. Integrating the sections will avoid duplication and will simplify the overall structure of the regulation.

If the Department retains the separate definition, GE proposes the following (changes in **RED**):

"§121.3 Aircraft and related articles. 1

(a) In Category VIII, except as described in (b) below, "aircraft" means ~~developmental, production, or inventory~~ **manned or unmanned** aircraft **that have any of the following characteristics**: 2

(1) are U.S.-origin aircraft that bear an original military designation of A, B, E, F, K, M, P, R, S;

(2) are foreign-origin aircraft "specially designed" to provide functions **that distinguish aircraft listed in (a)(1)) of this section from aircraft not so listed**; 3

(3) are armed or are "specially designed" to be used as a platform to deliver munitions or otherwise destroy targets (e.g., firing lasers, launching rockets, firing missiles, dropping bombs, or strafing);

(4) are strategic airlift aircraft capable of airlifting payloads over 35,000 lbs to ranges over 2,000 nm without being refueled in-flight into short or unimproved airfields; **or**

(5) are capable of being refueled in-flight.

~~(6) incorporate any "mission systems" controlled under this subchapter.~~ 4

~~"Mission systems" are defined as "systems" (see §121.8(g) of this subchapter) that are defense articles that perform specific military functions beyond airworthiness, such as by providing military communication, radar, active missile counter measures, target designation, surveillance, or sensor capabilities.~~

~~(b) Aircraft "specially designed" for military applications that are not identified in (a) of this section are subject to the EAR under an ECCN to be determined, including any unarmed military aircraft, regardless of origin or designation, manufactured prior to 1956 and unmodified since manufacture. Modifications made to incorporate safety of flight features or other FAA or NTSB modifications such as transponders and air data recorders are considered "unmodified" for the purposes of this subparagraph.~~" 5

1. The intent of the definition is to cover all type of aircraft that meet the criteria of §121.3. Including the undefined terms "developmental", "production", and "inventory" detracts from this intent. Should the Department disagree with deleting the terms, we recommend that these terms be further defined in this subsection.

   The addition of phrase "manned or unmanned" will help clarify that the §121.3 definition applies equally to all types of aircraft.

2. This change will improve readability of the subparagraphs and ensures they are considered as a series of "or" criteria vs. "and".

3. This change will help clarify that foreign designed items with functions similar to both military and civil aircraft should not be captured by the ITAR.

4. We recommend deleting this subparagraph in its entirety. The term "mission systems" is overly broad and will effectively designate any aircraft equipped with "mission systems" subject to the ITAR. For example, a Boeing 737 FAA civil certified aircraft that has been equipped with military

communications equipment would ostensibly be considered subject to the ITAR under USML category VIII(a)(11).

Including this language runs contrary to the spirit of proposed changes to §126.19, which addresses defense articles incorporated into commodities subject to the EAR. The proposed rule change acknowledges the negative effects of the "see through rule" and establishes a framework for eliminating licensing requirements for incorporated defense articles subject certain conditions.

In contrast, the proposed §121.3 expands the reach of the ITAR to all aircraft with embedded "mission systems" and perpetuates the "see through rule". Adopting our recommendation will not erode the Department's authority to oversee the embedded defense articles. Absent eligibility under §126.19, the "mission systems" at issue will remain subject to the ITAR and a license, or other authority, would be required for the export or re-export of these defense articles. Using the example above, the Boeing 737 FAA civil certified aircraft would remain subject to the EAR, while the "mission systems" would remain subject to the ITAR.

5. Deleting this subparagraph will help simplify the definition and prevent potential jurisdictional ambiguities. Pursuant to EAR Part 734.3, it is understood that any item not subject to the regulatory jurisdiction of another agency, is subject to the EAR. On this basis alone, the subparagraph is redundant and adds unnecessary complexity. Also, the "catch all" language used in the subparagraph is a significant departure from the "positive" control language used elsewhere in the proposed rule.

   Should the Department retain the subparagraph, we recommend resolving the following questions:

   Q – What USML code will apply to an aircraft that is "specially designed" for a military application not identified in §121.3(a), was manufactured before 1956 and has been modified?

   Q – What is meant by the phrase "under an ECCN to be determined"? We recommend removing the phrase as it is assumed the ECCN designation will be resolved before issuing the ITAR final rule.

COMMENTS AND SUGGESTED CHANGES TO VIII

1. Delete subparagraphs VIII(a) (5) and (6) related to Unmanned Aerial Vehicles.

   See GE's proposed changes to §121.3 definition of "Aircraft" above. The USML subcategories will be redundant if GE's recommended changes are adopted.

2. Delete subparagraph VIII(a) (11) related to aircraft equipped with Mission Systems.

   See GE's proposed changes to §121.3 definition of "Aircraft" above.

3. Change VIII(d) to (Changes in **RED**):

   (d) Launching and recovery equipment "specially designed" for defense articles described in paragraph (a) of this category. **Fixed land-based arresting gear is not included in this category.**

The proposed clarification will help clarify that land-based launch and recovery equipment is not included in USML Category VIII. This sentence is identical to language currently in USML VIII(d).

4. Change VIII(f) to (Changes in **RED**):

> "(f) Developmental aircraft **"specially designed" to provide functions that distinguish aircraft listed in VIII(a) of this section from aircraft not so listed** and "specially designed" parts, components, accessories, attachments, **firmware and systems** therefor developed under a contract with the U.S. Department of Defense.

This clarification will prevent any misinterpretation that all DoD funded programs are automatically subject to the ITAR. For example, GE engages in DoD-funded research activity that involves non-military applications (e.g., safety of flight, airworthiness, maintainability, fuel efficiency, acoustic signature reduction, etc.). Adding this clarification will confirm that DoD-funded developmental efforts that have non-military applications are subject to the EAR.

Many DoD funded programs are not specific to military applications or for military purposes. Examples include cost reduction efforts on dual-use products, development of alternative aviation fuels applicable to both military and commercial engines, and fundamental dual-use research that would today not be captured under the ITAR. There is no national security objective in preventing these technologies from commercial application.

Most DoD funded programs are cost-sharing efforts with industry. Industrial participation in cost sharing is largely driven by the ability of industry to use these technologies in their commercial products. Capturing otherwise commercial technology under the ITAR will significantly reduce the ability of industry to participate financially. Due to the cost-sharing nature of most DoD contracts, contracts can be written to directly avoid this proposed rule by having the DoD funded portion only cover aspects of the program that do not generate the actual technical data. For example, hardware may be assigned to the DoD, while actual testing and analysis paid by the industrial partner. Analysis models may be built with DoD funding, and run with industrial funding. Industry ownership of resulting technology is directly stated in DoD contracts. If additional restrictions are needed, DoD has direct authority to implement those restrictions during the contract award, where such restrictions can be financially evaluated. Fundamentally, funding is a poor predictor of national security interests, and adds unnecessary complication to the definition of a defense article.

The inclusion of the terms "firmware" and "systems" will ensure conformity with §121.8.

5. Change VIII(h) as follows (changes in **RED**):

> "(h) Aircraft components, parts, accessories, attachments, **firmware and systems for the aircraft described in VIII(a) and (f)** as follows:
>
> (1) Components, parts, accessories, attachments, **firmware and systems** "specially designed" for the following U.S.-origin aircraft: B-1B, B-2, F-15SE, F/A18E/F/G, F-22, F-35 (and variants thereof), F-117, or United States Government technology demonstrators **for the aircraft described in VIII(a) and (f)**. Components, parts,

c

accessories, attachments, **firmware and systems ~~of the F-15SE, and F/A-18 E/F/G~~** that are common to **~~earlier~~ other** models of **~~these~~** aircraft **(including parts that vary from those used on other aircraft solely by form or fit)** or listed **in CML 9A610.y**, unless listed below, are subject to the jurisdiction of the Export Administration Regulations;

d

(2) Face gear gearboxes, split-torque gearboxes, variable speed gearboxes, synchronization shafts, interconnecting drive shafts, and gearboxes with internal pitch line velocities exceeding 15,000 feet per minute and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(3) Tail boom, stabilator and automatic rotor blade folding systems and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(4) Aircraft wing folding systems and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(5) Tail hooks and arresting gear and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(6) Bomb racks, missile launchers, missile rails, weapon pylons, pylon-to-launcher

adapters, UAV launching systems, and external stores support systems and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(7) Damage/failure-adaptive flight control systems **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(8) Threat-adaptive autonomous flight control systems **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(9) Non-surface-based flight control systems and effectors, e.g., thrust vectoring from gas ports other than main engine thrust vector, "specially designed" for aircraft **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(10) Radar altimeters with output power management or signal modulation (i.e., frequency hopping, chirping, direct sequence-spectrum spreading) LPI (low probability of intercept) capabilities **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(11) Air-to-air refueling systems and hover-in-flight refueling (HIFR) systems and **components, parts, accessories, attachments, firmware and systems** "specially designed" therefor;

(12) UAV flight control systems and vehicle management systems with swarming capability, i.e., UAVs interact with each other to avoid collisions and stay together, or, if weaponized, coordinate targeting and **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(13) Lithium-ion batteries **"specially designed" for the aircraft in this category** that provide 28 VDC or 270 VDC **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

e

(14) ~~Lift fans~~, clutches, and roll posts for short take-off, vertical landing (STOVL) aircraft and **components, parts, accessories, attachments, firmware and systems** "specially designed" for such lift fans and roll posts; f

(15) Helmet Mounted Cueing Systems, Joint Helmet Mounted Cueing Systems (JHMCS), Helmet Mounted Displays, Display and Sight Helmets (DASH), and variants thereof **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(16) Fire control computers, mission computers, vehicle management computers, integrated core processers, stores management systems, armaments control processors, aircraft-weapon interface units and computers (e.g., AGM-88 HARM Aircraft Launcher Interface Computer (ALIC)) "specially designed" for aircraft **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(17) Radomes "specially designed" for operation in multiple or nonadjacent radar bands or designed to withstand a combined thermal shock greater than 4.184 x 106 J/m2 accompanied by a peak overpressure of greater than 50 kPa **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**;

(18) Drive systems and flight control systems "specially designed" to function after impact of a 7.62mm or larger projectile **and components, parts, accessories, attachments, firmware and systems "specially designed" therefor**; or

(19) Any component, part, accessory, attachment, **firmware** or system that:

*(i) is classified;

*(ii) contains classified software; g

(iii) is manufactured using classified production data; or

(iv) is being developed using classified information.

"Classified" in this subcategory means classified pursuant to Executive Order 13526, or predecessor order, and a security classification guide developed pursuant thereto or equivalent, or to the corresponding classification rules of another government **or other collective defense organization (e.g., NATO)**. h

a. These additions throughout this subparagraph will ensure conformity with §121.8 and will further limit the scope of the subparagraph to the defense articles defined in USML Categories VIII(a) and (f).

b. This change will limit the scope of the subparagraph to the defense articles defined in USML Categories VIII(a) and (f). This clarification will prevent any misinterpretation that all U.S. Government funded programs are automatically subject to the ITAR. Please see our rationale for changes to USML VIII(f), which are relevant for this requested addition.

c. This change will clarify that time is not a consideration for the control and will help narrow the scope of the USML to only those items that are "specially designed" for the defense articles listed in VIII(h).

d. Even with GE's proposed changes to USML Category VIII(h)(1), the subparagraph remains overly broad and falls well-short of a positive control listing. GE recommends that the Department further clarify precisely which parts and components for the listed aircraft warrant USML control and avoid over-reliance on the definition of "specially designed". Without further specificity, little will be gained from the overall export reform effort.

e. This change narrows the scope of USML VIII to lithium-ion batteries "specially designed" for the aircraft in this category as opposed to all lithium-ion batteries generally.

f. The use of "lift fans" here appears to duplicate the controls in subparagraph (9). The language in subparagraph (9) is more precise because it separates this type of lift from main engine thrust.

g. The asterisk is needed to designate relevant classified items Significant Military Equipment pursuant to §120.7.

h. This addition expands the definition of "classified" to include designations made by collective defense organizations such as NATO.

Finally, we recommend inclusion of language, similar to the existing note to USML VIII(h), that establishes a bright line for standard equipment covered by a civil aircraft type certificate issued by the Federal Aviation Administration. Alternatively, the proposed note would not be required if the Department adopts our proposed recommendations for the term "specially designed" discussed below.

6. Comment for VIII(i):

> "(i) Technical data (as defined in §120.10 of this subchapter) and defense services (as defined in §120.9 of this subchapter) **directly related** to the defense articles enumerated in paragraphs (a) through (h) of this category."

As used here, the term "directly related" is not a defined term. As such, there could be considerable variation in application of intended controls. It could also cause an overlap of controls between the ITAR and EAR. The term "directly related" is used throughout the ITAR and should be further defined. GE recommends the Department consider leveraging the EAR definition of "required" pursuant to §772, which would help ensure consistency between the regulations.

PROPOSED COMMENTS FOR SPECIALLY DESIGNED

GE understands that the Departments of State, Commerce and Defense are still reviewing the definition of "specially designed", both in the context of public comments received to the Department of Commerce propose definition published for public comment on July 15, 2011 and the Defense Trade Advisory Group (DTAG) presentation of November 9, 2011, and that it is their intent to have a single definition for this term that would be common to both the USML and the CCL. GE commends the Administration's efforts to establish clearer lines between the USML and the CCL and believes that a common definition of "specially designed" will help to resolve much uncertainty related to the determination of jurisdiction over military aircraft and related articles.

After review of each definition, we believe that the different versions published by the Department of Commerce on July 15 and by the Department of State in the December 2010 ANPRM (75 FR 76935)

version have certain merits worthy of consideration. As instructed, we are not using this forum to make specific comments on those definitions. But we do want to emphasize our belief that a successful reorganization of the USML depends on application of certain basic principles in the final definition.

First, the definition should avoid over-inclusiveness by excluding items with simple or common functions that have the identical utility regardless of the specific application. Thus items such as nuts and bolts, fasteners and other common hardware should be excluded. But also excluded should be parts and components with low levels of technology and having identical utility regardless of the specific application. Notably this would result in the exclusion of simple assemblies or "minor components" that incorporate technologies and are commonly used in end items that are described generally or specifically in multiple CCL categories[1].

Second, the definition should exclude any part or component that is interchangeable with identical parts or components used in an item listed or controlled on the CCL (including, but not limited to, 600 Series items). This would exclude any part or component used both on an article listed on the USML and an article controlled on the CCL. Thus a wing component that is used off the shelf both on an armed unmanned aerial vehicle and on a civil aircraft would not be on the USML.

Third, when excluding common or interchangeable parts and components, modifications that result in the part functioning for the exact same purpose with no additional performance criteria should not cause the part or component to be included on the USML. A simple change in the fit or form of an item, but not in its function by the application of commonly available commercial technology does not distinguish the item for its connection to other items on the USML[2]. A piece of equipment that is "specially designed" for use in a defense article should only be considered so if it has no other practicable function or use.

Fourth, when an item is specifically enumerated in another USML or on the CML category, it should be excluded from being included in a list through the operation of the "specially designed" definition[3]. This will avoid any confusion caused by whether one entry or another is used to test whether the item is on the USML or CML.

Finally, since the Department of State has instructed Industry to use the definition for "specially designed" provided in the December 2010 ANPRM, it is important to note that Industry's comments

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[1] Examples would include wiring harnesses, thermo-couples, pressure sensors and other components, which are types of items that are used broadly in a number of diverse civil products (*e.g.* planes, trains and automobiles), and which incorporate civil technologies that are not specifically controlled on the USML (or even on the CCL because of the low level of technology).

[2] A simple bolt with a length unique to a particular defense article but otherwise no different from many other bolts used on articles not on the USML, in terms of size, strength, materials, should not be listed on the USML but would be at risk for control because (i) its dimensions are properties that distinguish it for the predetermined purpose of being used in a particular defense article, (ii) it is directly related to the defense article's function (the article can't function without being properly held together), and (iii) because of its one unique dimension (the length), it is only used on the one particular defense article and not on any other.

[3] An example is an engine for an aircraft. An engine may be captured within the definitions of components or equipment for certain aircraft, but engines are separately treated in another USML category.

only reflect the concerns and issues raised in the context of that definition. Accordingly, GE strongly requests that when the definition is finalized[4], the public be given another opportunity to comment on the definition and on this proposed revision of U.S. Munitions List Category VIII prior to any adoption in the USML.

If you have any questions or require additional information concerning this submission, please contact the undersigned at (202) 637-4206 or by e-mail at: kathleen.palma@ge.com or Mr. Scott W. Jackson at (513) 243-5755 or by email at scott_jackson@ge.com.

Sincerely,

Kathleen Lockard Palma
Executive
International Trade Compliance

[4] The US Government should not assume by the fact that industry has commented on the BIS proposed definition for the EAR, that those comments address any concerns about its use in the USML. The USML changes proposed by this proposed rule were unknown at the time of those comments so could not be factored into Industry's deliberations.

DRS Technologies, Inc.
Trade & Security Compliance Office
2345 Crystal City Drive
Arlington, VA 22202

December 21, 2011

Mr. Robert S. Kovac
Managing Director
PM/DDTC, SA-1, Room 1200
Directorate of Defense Trade Controls
Bureau of Political Military Affairs
U.S. Department of State
Washington, DC 20522-0112

Subject: Response to the Proposed Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII - 76 FR 68694, RIN 1400-AC96

Dear Mr. Kovac:

DRS Technologies, Inc. is fully supportive of the U.S. Government efforts to reform the regulations and systems for controlling exports. As a 10,000+ employee company with products and customers in both the international commercial and defense markets, we are very familiar with the current export control systems. The reforms are much needed to help the U.S. export control apparatus stay in step with the ever evolving and changing global markets and national security climates.

Creation of a revised U.S. Munitions List ("USML") based on positive criteria is critical to the success of the reform effort. The positive criteria put forth should be based on the unique military capabilities of an end-item, which is essentially their ability to operate in unique ways in hostile environments. Once defined, the end-item positive criteria would become the positive criteria for determining the level of control for lower level articles included in the complete defense article. The controls for every component, piece, part, software, or technology cited for control should have traceability through the positive criteria directly to the capabilities listed in the end-item as the reason for control.

To the maximum extent possible, a positive list should be void of the jurisdictional ambiguity that stems from the use of the term "specially designed." If there are no definitive, identifiable positive criteria directly traceable from a part or component to the unique military capability and end item, then those items should not be subject to control under the International Traffic in Arms Regulations ("ITAR"). Subjective catch all phrases such as "specially designed" are counter to the definition of a positive criteria list and exacerbate the lack of clarity that already exists within the USML.

A second factor to consider in the development of these positive lists is the worldwide commercial market. If end-items, parts, or components are available in the commercial market, the positive criteria should be reviewed for validity and necessity of ITAR control.

The proposed rule revising USML Category VIII is a positive step towards the above with the goal of eliminating from ITAR control many common, every-day items which do not directly contribute to the unique military capability of defense articles. There are several areas within Category VIII, discussed in more detail below, that appear to expand the reach of the ITAR and other areas where the wording increases confusion regarding export jurisdiction. Additionally, we have applied our below specific comments and provided an alternative version of Category VIII at the end of our comments.

Specific Comments on VIII-Aircraft and Related Articles

VIII(a)(1) thru VIII(a)(10). There is no specificity or otherwise positive criteria to define the aircraft to be controlled other than the use of generic, undefined phrases such as "Bombers," "Fighters, and "Unarmed military unmanned aerial vehicles." In the proposed revision to USML Category VII, in one instance the Department defined vehicles to be controlled as those with weapons specified in category IV. We recommend a similar approach here. The aircraft to be controlled should have internal bays or external hard points for carrying weapons identified in categories IV, have systems integrated into the aircraft identified in categories II, XI, XII, XIV, or XVIII, or be designed, modified, or configured to reduce the IR, RF, or acoustic signature of the aircraft (excluding such modifications for normal commercial use (e.g. FAA noise abatement requirements)).

VIII(a)(11). "Aircraft equipped with any mission system controlled under this subchapter." The word "equipped" is overly expansive and not consistent with the language in §121.3(a)(6) cited later in the proposed rule. We recommend this sentence be changed to read "Aircraft with any mission system (as defined in §121.6) controlled under this subchapter incorporated or otherwise integrated into it."

VIII(h)(1). As written, this paragraph presents the possibility for controlling every single part, component, accessory, attachment, and equipment for the cited aircraft. First, specially designed is not yet defined. As a result, every part could be specially designed. Second, with the exception of the B-1B, all cited aircraft are stealth or have some stealth technology. If the intent of the Department is to control stealth technology, then this section should be amended to reflect that. Third, if that is the intent, the reference to the B-1B should be removed as it is not a stealth aircraft. The B-1B has a lower radar cross section than its predecessor, the B-52. But, it is not a stealth aircraft, as cited in the early 1990s Congressional Record testimony by General Mike Loh, then commander of the U.S. Air Force Air Combat Command, regarding discussions with the U.S. Senate Armed Services Committee on the B-1B and it being low observable or not. Fourth, regarding parts and components of the latest versions of the F-15 and the F-18, the only requirement for control under the ITAR is that they not be common with earlier models of these aircraft. There is no requirement that they be specially designed or otherwise directly related to whatever the reason is for such items to be called out in paragraph VIII(h)(1). Lastly, the term "equipment" is not defined. Parts, components, accessories, and attachments are defined in §121.8. Equipment should either be added to this definition or deleted from VIII(h)(1). An

alternative to this paragraph, focused on controlling the parts and components related to stealth technology, rather than all parts and components is attached to this letter.

VIII(h)(6). This paragraph should be deleted as the items are not category VIII items. These articles are all USML Category IV articles. See Category IV and §121.5 for reference.

VIII(h)(7). Damage/failure-adaptive flight control systems currently exist on numerous commercial aircraft including the Boeing 777 and the Airbus A-340. This paragraph should either be deleted or the specific positive criteria added to it to clarify the unique military-only type damage/failure-adaptive flight control systems that warrant control under this subchapter.

VIII(h)(9). Currently, Airbus of Spain holds a patent for thrust vectoring on commercial aircraft. This paragraph should either be deleted or revised to add specific positive criteria to define the non-surface-based flight control systems and effectors of a unique military-only nature that warrant control under this subchapter.

VIII(h)(13). This paragraph should be deleted. 28 VDC and 270 VDC lithium-ion aircraft batteries are not uniquely military. Crane Aero currently makes 28 VDC lithium-ion batteries for the Boeing 727, 737, 747, 757, 767, and 777 as well as the Gulfstream III, IV, and V. Panacis, a Canadian battery company makes 270 VDC 3rd generation lithium-ion batteries for a host of applications. Batteries simply produce electricity. To achieve a given level of electricity, individual cells are strung in series. Citing a 270 VDC battery as ITAR would mean the Panacis 7-cell battery would be ITAR while a 6 or 8 cell battery would be commercial, and the individual cells would be commercial whether for a 6, 7, 8, or any other cell size battery. Accordingly, controlling the 7-cell battery on the USML does not seem very logical. Producing 28 VDC or 270 VDC electricity is not a unique military application. It should not be controlled as such.

VIII(h)(15). This paragraph should be deleted as the items are not category VIII items. These articles are all USML Category X with portions that reside in Category XII.

VIII(h)(16). This paragraph should be deleted as the items are not category VIII items. These articles are all USML Category XI and Category XII.

VIII(h)(18). Commercial drive systems and flight control systems are not specially designed to function after impact with a 7.62 mm or larger projectile. They are however designed to function after impact with large birds. A 7.62 mm projectile weighs approximately 10 grams and has a muzzle velocity of 2700 feet per second. Commercial aircraft are tested to function after impact with a 4 pound (1814 grams) object in the engine and an 8 pound (3628 grams) object on the empennage (tail structure) at sea level cruise speed (Vc). For a Boeing 737 Vc is approximately 340 nm/hr. The kinetic energy generated in the commercial aircraft impact (21,000 joules and 42,000 joules respectively) is significantly higher than that generated by the impact of a 7.62 mm round (approximately 3400 joules). This paragraph should either be deleted or the specific positive criteria added to it to clarify the unique military-only type damage/failure-adaptive flight control systems that warrant control under this subchapter.

Specific comments on §121.3 Aircraft and related articles

§121.3(a)(4). The definition in this paragraph states that it covers strategic airlift aircraft capable of airlifting certain payloads a certain unrefueled distance into short or unimproved fields. However, strategic airlift aircraft themselves are undefined as are short fields. The NATO definition of short take-off (and vertical landing) is to clear a 50 foot high obstacle within 1500 feet of commencing take-off run. A short field though is not defined and is aircraft dependent. A Boeing 747 normal landing distance is less than 6000 feet. A Boeing C-17 is closer to 3000 feet. The 747 carries more cargo and for a longer unrefueled distance. Carrying a large amount of cargo a long distance and landing on a short runway (to be defined) does not appear to be uniquely military. A more objective military criteria for cargo aircraft might be that it have a rear facing cargo door that can be opened in flight for the purpose of dropping or otherwise extracting cargo while in-flight as opposed to simply carrying it and landing on a short runway, defined as a runway of some arbitrary length.

Specific comments on Specially Designed

The term "specially designed" is used fourteen times in the proposed revision to category VIII and three times in the proposed revision to §121.3. The success of this proposed revision will obviously be very dependent on this definition. The proposed definition put forth in the December 2010 ANPRM (75 FR 76935) provided the requirement that to be considered specially designed an item must have properties distinguishing it for certain predetermined purposes and that it relate directly to the functioning of the defense article. Subsequent versions of specially designed have not included this clear line and we strongly urge the Department to adopt the above definition. If that is not possible, we would recommend that for any definition there be separate criteria for parts, components, accessories, and attachments rather than lumping these four distinct groups into one and where the criteria for that groups is simply form, fit, and function. Parts are different than components and should be treated differently. A part's uniqueness is based on its form and fit given its design is based on specific limitations of the higher level item it is designed to fit into. The design of a component is not necessarily form and fit dependent on the item it will be associated with. It is more function dependent. For a part to be considered specially designed its form and fit should be the salient criteria whereas for a component it should require a unique function to the item it will be associated with for it to be considered specially designed. Attachments and associated equipment should be removed from the specially designed discussion. Attachments and associated equipment are outside the defense articles themselves. As such, they should be enumerated items.

Alternative version of Category VIII

§121.1 General. The United States Munitions List.

VIII – Aircraft and Related Articles

(a)Aircraft, manned or unmanned, fixed or rotary wing, as follows:

(1) Aircraft manufactured after 1956 and having hard points and or internal bays for carrying weapons identified in category IV of this subchapter

(2) Aircraft having systems indentified in categories II(a), II(d), XI(a)(3), XI(a)(4), XI(b), XII(a), XII(b), XIV(f), XVIII(a) of this subchapter integrated into them.
(3) Aircraft designed, modified, or configured to reduce the IR, RF, or acoustic signature of the aircraft.

Note: This does not include such modifications for normal commercial use (ex. civil aviation noise abatement requirements).

(4) Aircraft having any engine specified in category XIX of this subchapter.
(5) Aircraft capable of performing in-flight refueling.
(6) Aircraft capable of being refueled in-flight.
(7) Aircraft with rear cargo doors that are capable of being opened in-flight such that palletized cargo, vehicles, and similar equipment may be air dropped or otherwise extracted in-flight.

(b) Components, parts, special paints, and coatings "specially designed" to reduce the signature (e.g., radio frequency, infrared, electro-optical, visual, ultraviolet, acoustic and magnetic) of aircraft enumerated in VIII(a), including developmental aircraft and/or United States Government technology demonstrators, using features or methods not in the public domain (§120.11). Items that enhance the signature reduction of the aircraft only through plan form alignment, unless specifically enumerated in this subchapter, are subject to the jurisdiction of the Export Administration Regulations.

(c) On-board active or passive systems designed to reduce the IR, RF, or acoustic signature of the aircraft.

Note: paragraphs VIII(b) and (c) above do not include such items designed to reduce such signatures due to normal commercial requirements.

(d) In-flight refueling systems, including Hover-In-Flight-Refueling systems.

(e) In-flight cargo extraction equipment.

(f) Damage-adaptive and failure-adaptive flight control systems specially designed for the aircraft controlled in this subchapter.

(g) Threat-adaptive autonomous flight control systems.

(h) Flight-control and flight-management systems capable of interacting with other aircraft to fly in close proximity to other aircraft, avoid collision, or to coordinate targeting.

Note: Paragraph VIII(h) does not include such systems designed for normal commercial collision avoidance requirements (ex. Traffic Alert and Collision Avoidance System (TCAS)).

(i) Launching and recovery equipment for the articles in paragraph (a) of this category, excluding fixed land-based arresting gear.

As we stated earlier, these reforms are much needed to help the U.S. export control apparatus stay in step with the ever evolving and changing global markets and national security climates. Moving to a positive criteria list, based on the unique military capabilities of an end-item, will do much to remove unnecessary export license applications from the system and allow companies with truly commercial products to compete in the global market. The above methodology will help to create a positive USML that will effectively support both government and industry while enhancing national security.

Should you have any questions in this matter or require additional information, please contact Mr. Greg Hill at (703) 412-0288, ghill@drs.com.

Sincerely,

Heather C. Sears
Vice President, Trade & Security Compliance
& Associate Corporate Counsel
DRS Technologies, Inc.

TechAmerica
WHERE THE FUTURE BEGINS
THE ASSOCIATION OF COMPANIES DRIVING INNOVATION WORLDWIDE

December 22, 2011

Sent via email to: DDTCResponseTeam@state.gov

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
ATTN: Regulatory Changes—ITAR Amendments--Category VIII
Bureau of Political Military Affairs
U.S. Department of State
Washington, DC 20522-0112

RE: Federal Register: November 7, 2011 (Volume 76, Number 215)
RIN 1400-AC96

Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII

Dear Sir or Madam:

TechAmerica would like to thank the Department of State for the opportunity to comment on this rule which proposes to amend the International Traffic in Arms Regulations (ITAR) to revise Category VIII (aircraft and related articles) of the U.S. Munitions List (USML) to describe more precisely the military aircraft and related defense articles warranting control on the USML.

Regulatory Clarity

TechAmerica supports revisions to the regulations intended to create positive control lists and transfer items that no longer warrant control under the ITAR to the Export Administration Regulations (EAR). However, with the publication of proposed revisions to Category VIII of the ITAR, we are becoming concerned with the potential for significant increase in regulatory complexity that defense exporters could face once items removed from the USML are transferred to the Commerce Munitions List (CML). The net result could be that in one transaction, a U.S. exporter will find itself exporting pursuant to two military lists, two different sets of regulations and potentially a third category with the Strategic Trade Authorization exception. The resultant interpretive burden could increase the challenge to enforcing agencies as well as exporters.

Harmonization of Definitions

We continue to encourage U.S. Government focus on the harmonization and clarification of key definitions across different regulations to include definitions for military aircraft, build-to-print technology, and specially designed (please see additional detail below).

Specially Designed Definition

The definition of "specially designed" is an essential element of controls both in the ITAR and EAR rule. It is difficult to understand and comment upon the newly proposed controls for specific export scenarios or to understand the full implications of the changes, both for items listed in Category VIII and for those transferred to Commerce until we have a new definition to review. That stated, we recommend that State and Commerce withhold publication of the USML revised final rules until industry has the opportunity to comment on the new definition that we understand will be published in the coming weeks.

Again, TechAmerica would like to thank the Department of State for the opportunity to provide comments on this proposed rule which is part of the President's Export Control Reform initiative. We look forward to reviewing additional rules as they are published.

Sincerely,

Ken Montgomery
Vice President, International Trade Regulation

Association Connecting Electronics Industries

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December 22, 2011

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
Department of State
VIA EMAIL: DDTCResponseTeam@state.gov

Re: Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII (Federal Register Docket ID. 2011-28502, RIN 1400-AC96)

IPC — Association Connecting Electronics Industries welcomes the opportunity to comment on the proposed revision of United States Munitions List ("USML") Category VIII as detailed by the Department of State's Federal Register notice. As an organization with a long history of cooperation with and support of the agencies that develop and implement national security policy, IPC shares the Department of State's concern that the proposed rule ensures appropriate USML coverage and fully protects U.S. national security. Therefore we would like to provide the following comments in response to the proposed amendment.

I. Executive Summary

IPC believes it is important that the Category VIII rule – and similar USML/CCL rules developed in the future – ensure clear treatment of printed boards and their designs as the Directorate of Defense Trade Controls ("DDTC") transitions certain parts, components, accessories, and attachments from the USML to the Commerce Control List ("CCL"). Specifically, the rules should make clear that the design instructions for printed circuit boards will remain under International Traffic in Arms Regulation ("ITAR") control when the end item for which the board was designed is included on the USML.

Printed circuit boards and their designs hold valuable and specific information about the workings of the underlying defense articles themselves. As examples, printed board designs can convey the following types of information: how sensitive an aircraft or its counter measure dispensing systems are to electronic disruption; the frequency range and range of operation for flight communications equipment; and design information for integrated avionics and vehicle management systems that may allow for reverse engineering of the technology.

Under the current ITAR, printed board designs for military aircraft and related defense articles are controlled by Category VIII(i) and/or Category XI (Military Electronics), because they reveal technical data regarding both the printed boards and the ultimate defense articles into which the printed boards are installed. IPC recommends that DDTC clarify the status of printed board designs in its final rule regarding Category VIII and has suggested one approach in Section IV.C., below. Further, IPC recommends that DDTC consider the issue of printed circuit board designs in the context of its ongoing revision of the USML, through steps such as (1) clarifying the scope of technical data in each USML Category, noting that printed board design coverage

follows the coverage of the end item itself, (2) amending the definition of "technical data" in 22 C.F.R. §120.10, to clarify this point across all categories, and (3) clarifying Category XI to refer expressly to printed board designs for defense articles.

II. About IPC

IPC is a U.S.-headquartered global trade association, representing all facets of the electronic interconnect industry, including design, printed board manufacturing and printed board assembly. IPC has more than 3,000 member companies of which 1,900 members are located in the United States. IPC is the definitive authority on standards used by the global electronics industry and is the leading source for training, market research and public policy advocacy and other programs to meet the needs of an estimated $1.7 trillion global electronics industry.

Printed circuit boards ("PCBs") and printed board assemblies provide the critical underpinnings of the operations and control of all modern military equipment, including unmanned vehicles, communications equipment, and missile defense systems: they are the "central nervous system" of military electronics. IPC's standards, specifications, and guidelines developed for printed boards have replaced several U.S. military electronics standards. Fifteen IPC standards have been adopted for Department of Defense ("DoD") use. Half of these specifically relate to the materials for PCBs as well as the design for critical high speed circuits. In addition, for over 20 years NASA has specified IPC standards for their PCB requirements. Nearly all tier-one military original equipment manufacturers (OEMs) are IPC members and active participants in IPC's standards development. IPC standards are used by tier-one military OEMs and their suppliers in the design of defense electronics. As detailed in Appendix A, military and aerospace OEMs represent 75% of the top purchasers of IPC standards.

IPC has a long history of cooperation with and support of the DoD. IPC has been a leader in addressing issues of concern to the agency including counterfeit parts, intellectual property protection, and the direction of technology. IPC's DoD Task Force, comprising senior level executives from leading North American printed board manufacturers and electronics manufacturing services ("EMS") companies that supply the DoD with products and technology, provides industry expertise to Congress, the DoD, the Department of State and the Department of Commerce. Many IPC members supply electronics to the military and are experienced using ITAR and EAR as part of their daily business. Recently IPC and its members developed a *Best Industry Practices for Intellectual Property (IP) Protection in Printed Board Manufacturing* standard that is used by printed board manufacturers to better protect the IP embedded in printed boards manufactured for commercial, industrial, military and other high- reliability markets.

III. National security significance of printed circuit boards and designs

IPC and its members recognize the value of establishing "a clearer line between the USML and the CCL regarding controls over military aircraft and related items." 76 Fed. Reg. 68695. However, IPC believes it is important that the Category VIII rule – and similar USML/CCL rules developed in the future – ensure clear treatment of printed boards and their

designs as the DDTC transitions certain parts, components, accessories, and attachments from the USML to the CCL. In particular, the rules should make clear that the design instructions (known as "digital data" in the industry) for printed circuit boards will remain under ITAR control when the end item for which the board was designed is included on the USML. This clarification would ensure appropriate USML coverage and protect national security by controlling important technical data about ITAR controlled items.

A. Overview

Specialized printed board and printed board assemblies are custom-made and uniquely designed for the specific function of the electronic items in which they are incorporated. Each printed board is exclusively designed to hold and connect specific additional components and therefore contains a roadmap of the operation of the USML item for which it is custom-designed. The design and placement of the parts that constitute a printed board are dictated precisely by the nature and type of electronic components to be mounted on the board, which are in turn dictated by the specifications of the product into which the printed board assembly is to be incorporated. Manufacture of the printed board requires access to and use of all of the board's design information. This access exposes a significant portion of the intellectual property for both the printed board and the item for which it is uniquely designed.

As military systems have become increasingly sophisticated, the design and production of their printed boards have become more complex and convey more information. Fundamental factors for printed boards in defense applications include reliability, ruggedness, speed, density, and frequency. For example, embedded within military electronics may be a mix of components capable of broadcasting analog and digital signals on a common substrate. In order to produce this technology, printed boards must be created with unique design configurations. Additionally, military electronics may also use new laminate materials with lower dielectric constants and better signal integrity. Further, the increasing complexity of military circuitry requires more functionality in less space, resulting in incorporating high density interconnect ("HDI") technology into DoD specific electronics. Access to these types of parameters, which are outlined in the design of printed boards, provides critical insight to the capabilities, strengths, and weaknesses of the items for which the boards were designed.

The printed board layout – particularly the structure and pin count of large buffer gate arrays ("BGAs"), and the number and routing restrictions on the primary buses – provides critical information regarding the processor(s), field programmable gate arrays ("FPGAs"), memory system (i.e., DDR), input/output bus (i.e., 1394B) technology, and other parameters. This basic information provides technical insight into how the end item functions. Once a parent system for the printed board is identified, a readily achievable task given the amount of information in the public domain, the board design will provide a roadmap to its functionality, including dimensional specifics, radio frequency specifics, and control system speeds and logic. These parameters are often at the heart of classified information about our defense systems. Further, this knowledge would enable an adversary to determine the level and frequency of electro-magnetic pulse needed to disrupt the defense article's electronic functioning.

The manufacture of any printed circuit board requires a complete data package. As demonstrated above, this data package contains a substantial amount of intellectual property. The drawings and digital data would include:

- Net list that contains all the points that are electrically connected and all the points that are electrically isolated
- Materials and number of layers which includes the type of insulating materials and the amount of copper used in the construction
- Physical size and shape of the final printed circuit board
- Footprints of all the components and connectors that will be connected (soldered, wire-bonded, etc.) to the printed circuit board, which identifies the components used in the assembly
- Key electrical connections including their impedance and timing
- Location and size of all the mechanical and laser drilled holes
- Layers that function as the power and ground layers for these key electrical connections
- Reliability requirements
- Special use testing requirements for example flight or space applications

Also included in many instances:

- Bill of Materials: A document identifying every component, the manufacturer and manufacturer part number, as well as the reference designator that identifies the physical location of the part.
- Schematic: Also known as the circuit diagram or logic diagram, this diagram maps out the way electrical components are connected together and is often supported by notes outlining the specifications of components. The schematic provides more precise detail as to the functionality of the circuitry of an end item.

In sum, printed circuit boards and their designs hold valuable and specific information about the workings of the underlying defense articles themselves. (Section III.B, below, provides some specific examples.) Companies with access to the designs of printed boards for defense articles thereby also have access to sensitive information about controlled technologies. This exposes these technologies to malicious intrusion that may undermine the reliability of U.S. weaponry and other critical equipment. Failure to properly secure the information embedded in printed boards that are custom-designed for defense articles could result in a breach of national security, theft of critical defense-related intellectual property and allow for reverse engineering of our critical defense systems.

B. Specific Examples

Following are several examples of printed board designs that convey technical data regarding the defense items for which the printed board was designed:

- Fly-by-wire flight controls: The design of the printed boards that are incorporated into flight controls can reveal the data buses used in the controls. Data buses are the communications channel between the flight computer and the aircraft control surfaces.

Understanding the data bus types can suggest potential weaknesses of the aircraft that may be exploited, including how sensitive the aircraft is to electronic disruption.

- Counter Measures Dispensing Systems: Integrated with missile warning systems and radar warning receivers, these self-defense chaff and flare dispensing systems are used on combat aircraft (including the F-15, F-16, F-22, and F-35), helicopters (including the AH-64, CH-53, UH-60, and AH-1), and transport aircraft (including the C-130). The design features of the printed circuit boards for these items can reveal means of electronic disruption on these basic aircraft defense systems. The use of this information to incorporate active suppression of chaff and flare dispensing systems into the next generation of surface-to-air and air-to-air missiles could pose a threat to aircraft and crew.

- Electronic Warfare Systems: Design instructions necessary for manufacturing the printed boards that are incorporated into phased-array systems and tactical radar and jamming systems outline the dimensions and placement of conductive and insulating patterns. Data of this type reveal specific frequency information about the systems themselves. Further, access to the printed board design imparts knowledge about the general system design, such as which components must be separately packaged and how the system may be countered or disrupted by external means.

- Flight Communications: The UHF/VHF radios designed for military aircraft incorporate printed circuit boards for receiver and transmitter components. Both of these board designs reveal the general frequency range in which the radio operates. Additionally, the transmitter board designs reveal the power level of the transmission, which equates to the range of operation for the device. Knowledge of these parameters could facilitate attempts to jam or intercept in-flight communications.

- Integrated Avionics: One of the key elements that gives fighter jets (such as the F-22) a tactical advantage against the threats of the future is the integration of its avionics. These systems require integration at many levels, including sensor control, sensor data fusion and the architectural components that support these functions. Displays within the aircraft are the primary means of communicating all of this information to the pilot. These functions are driven through complex electronic systems that are based on backplanes, which is a printed board that has additional modules of printed boards connected to it for increased functionality, such as accurate situational assessment and weapons fire control. This high speed computing system allows the pilot to focus on mission success rather than managing manual sensors. Design features of these boards could lead to reverse engineering of the key elements related to electronics involved in the avionics system.

- Radar: Radar is a primary sensor and is a long-range, rapid scan, and multi-functional system. The latest radar technology involves electronically scanned array antenna, which is composed of several thousand transmit/receive modules, circulators, radiators and manifolds assembled into sub-arrays and integrated into a complete array. The baseline design uses many different types of RF & Microwave assemblies that consist of many different printed boards. The intellectual property of the assemblies, *i.e.* the instructions

as to how to integrate these modules into a functioning radar system, resides primarily in the design of the printed board.

- Vehicle Management System (VMS): The VMS provides integrated flight and propulsion control and enables the pilot to aggressively and safely maneuver the aircraft to its maximum capabilities. The system includes a control stick, throttle, rudder pedals and actuators, air data probes, accelerometers, leading edge flap drive actuators, and the primary flight control actuators. This system comprises devices that are all assembled with printed boards. The design of these boards could compromise information related to the devices being used, such as computing speed and other operating parameters.

IV. Applicability of ITAR to Printed Circuit Boards and Their Designs

A. Current Rule

1. Printed Boards

Printed circuit boards designed for defense articles are generally within the scope of the USML's controls on "components" that are specifically designed or modified for defense articles. Of relevance here, printed boards that are designed for military aircraft or other Category VIII items may be generally considered as subject to USML control as Category VIII(h) components. IPC recognizes that certain printed boards may also, or alternatively, come within the controls of Category XI(c) Military Electronics, as components specifically designed or modified for military electronic systems or equipment. IPC intends to comment on any proposed rule that DDTC publishes regarding Category XI; however, given the potential application of Category VIII, and the relevance of IPC's comments to other USML Categories including Category XI, IPC considers that it may be useful for DDTC to receive these comments regarding Category VIII at this time. [1]

Moreover, due to their unique characteristics, printed boards may also be considered as "technical data" related to the defense articles into which they are incorporated, such as military aircraft. The definition of "defense article" includes "technical data recorded or stored in any physical form, models, mockups or other items that reveal technical data directly relating to

[1] IPC recognizes that there will be many printed boards installed on a military aircraft that are not specifically designed for a USML item. For instance, a printed board may be designed for a dual-use computer used on the aircraft. IPC understands and agrees that such printed boards are not subject to the USML. IPC's comments only address printed boards that are designed for USML items.

In addition, the Missile Technology Control Regime ("MTCR") Annex to the ITAR, 22 C.F.R. §121.16, Item 14, provides that certain printed circuit boards with specific technical parameters are controlled on the MTCR Annex and are subject to the ITAR. IPC assumes that such printed boards will remain subject to the ITAR, although it is unclear whether this provision may require an amendment to the proposed rule in order to specify that such boards remain covered in Category VIII or whether another Category would apply.

items designated in § 121.1." 22 CFR § 120.6. Printed boards may be considered as technical data stored in a physical form, given that the boards reveal important information about the defense articles into which they are incorporated. Therefore, printed boards designed for military aircraft and aircraft components may also be considered as Category VIII(i) technical data under the current ITAR.

2. Printed Board Designs

Under the current ITAR, technical data directly related to enumerated defense articles are generally included in the USML. Technical data, as currently defined, include "[i]nformation, other than software . . ., which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles." 22 CFR § 121.10(a). Further, the regulations specify that "[t]his includes information in the form of blueprints, drawings, photographs, plans, instructions, or documentation." Id.

Printed board designs reveal information about the design of printed boards, by definition. However, as described in Section III above, these designs reveal technical data regarding the defense articles for which the printed boards are designed as well. Thus, under the current rule, the printed board designs are controlled because they reveal technical data regarding both the printed boards and the ultimate defense articles into which printed boards are installed. Therefore, the designs for military aircraft printed boards are generally included in the USML, under Category VIII(i).

B. Proposed Rule

1. Printed Boards

Under the proposed rule, it is unclear whether printed boards would be transferred to the jurisdiction of the CCL. The proposed rule generally transfers to the CCL all components specifically designed for military aircraft, with the exception of certain listed components as well as components that are specially designed for certain stealth aircraft. See Proposed Rule, 76 Fed. Reg. 68694, 68695. On the other hand, the proposed rule retains on the USML all "technical data … directly related to the defense articles enumerated in paragraphs (a) through (h) of this category." Id., 76 Fed. Reg. at 68697. As noted above, printed boards may be considered as "technical data" related to the defense articles into which they are incorporated, such as military aircraft. Accordingly, it is possible that printed boards would remain on the USML as technical data (in physical form) related to defense articles.

IPC recommends that DDTC clarify the proper treatment of printed boards, to ensure that the industry understands the U.S. government's position regarding the proper export control jurisdiction of these important products.

2. Printed Board Designs

If printed boards themselves are retained on the USML as "technical data" in physical form, then printed board designs necessarily must be retained on the USML also. The printed

board designs convey the same information as do the printed boards about the defense items into which printed boards are incorporated, just in a different format.

Moreover, even if DDTC determines that printed boards for defense articles are not subject to USML jurisdiction, DDTC should determine that printed board designs are subject to the USML as "technical data". Plainly, printed board designs are not "components", and therefore – unlike printed boards themselves – the treatment of board designs is not directly affected by the transfer to the CCL of most components specially designed for USML items. Instead, printed board designs must remain on the USML because, as discussed above, they convey technical data regarding the defense items into which printed boards are incorporated.

Therefore, control of printed circuit board digital data and related designs should follow the categorization of the end item itself, whether or not the physical printed circuit board remains an ITAR controlled item. Accordingly, if an end item is not on the USML, then the design data for any of its printed circuit boards would be under EAR/CCL control. However, if the end item is on the USML, the design data for its printed circuit boards must remain under ITAR control as USML technical data.

C. Recommendation

For these reasons, IPC recommends that DDTC clarify the status of printed board designs in its final rule regarding Category VIII. For instance, DDTC could state the following in the Final Rule when it responds to public comments:

> One commenter requested that DDTC confirm that the design and digital instructions for printed circuit boards specifically designed for military aircraft and other Category VIII items are "technical data" within the meaning of Category VIII(i). DDTC confirms that these designs and digital data fall within the standard definition of "technical data," to the extent that they contain technical data directly relating to Category VIII items. Accordingly, such printed board designs and digital instructions are subject to the USML when the end item for which the printed circuit board is designed is identified in Category VIII.

IPC recognizes that there could be a number of ways to address this issue.

V. Overall Export Control Reform

The issue of printed circuit board designs is not unique to the Category VIII military aircraft context. Every category of USML items includes the technical data directly related to those items.[2] These printed circuit board designs and digital data constitute technical data relating to the various end-items and USML components identified in each category because they contain information required for the design, development, manufacture, etc. of those defense articles.

[2] See 22 C.F.R. § 121.1 Category I(i), II(k), III(e), IV(i), V(h), VI(g), VII(h), IX(e), X(e), XI(d), XII(f), XIII(l), XIV(m), XV(f), XVI(e), XVII(a), XVIII(f), XX(d), XXI(b).

Examples of the type of technical data printed circuit board designs may contain about end-items in other USML categories include:

- Space-Based Radar: Currently, the use of ceramics (LTCC) is carefully controlled in recognition of the importance of the intellectual property of this process to the function of the radar system. However, absent clarification that board designs remain covered as technical data, the move from LTCC to printed circuit boards – a move now underway to improve the performance of these systems – will allow this information to escape ITAR control. The process of moving to printed boards has been a key development in advancing the capabilities of space-based radar. If the designs for printed board for space-based radar are not tightly controlled, there is a significant risk that key elements of the radar system design will be released, compromising U.S. national security interests.

- Small Caliber (80mm – 120 mm) Smart Munitions Fuze: The smart munitions fuze has been used extensively by U.S. forces in both Iraq and Afghanistan. There is no fuze this sophisticated anywhere in the world for this caliber of munitions, *i.e.* portable mortar rounds. A flexible printed circuit board is the heart of this fuze. It supports and interconnects all of the electronics in this state-of-the-art proximity fuze. The design of the fuze, while not necessarily exposing the frequencies at which the antenna operates, exposes the operation of the fuze which then could easily be replicated and/or neutralized.

- IED Jammers and Detectors: Improvised explosive devices, also known as IEDs, roadside bombs, and suicide car bombs, have caused over 65% of all American combat casualties in Iraq and over 60% of casualties in Afghanistan, both killed and wounded.[3] Prevention of the remote detonation of these devices has been accomplished through jammer systems called Joint Counter Radio-Controlled Improvised Explosive Device ("RCIED") Electronic Warfare ("JCREW"). These systems, such as the CREW 2.1, are high-power, modular, programmable, multiband radio frequency jammers that deny enemy use of selected portions of the radio frequency spectrum. Three state-of-the-art printed circuit boards help determine the frequency and range capability of JCREW systems. Access to the design of these boards could lead to an understanding the system architecture and how to circumvent the jammers, thus allowing for increased remote detonation of IEDs in the field of combat.

For this reason, IPC recommends that DDTC consider the issue of printed circuit board designs in the context of its overall revision of the USML, not just Category VIII. For instance, in each rule, DDTC could explicitly clarify the scope of technical data and note that the digital data and instructions for the manufacture of printed circuit boards is a USML item when the end

[3] Department of Defense Personnel and Military Casualty Statistics, *Global War on Terrorism by Reason, October 7, 2001 through December 5, 2011*, http://siadapp.dmdc.osd.mil/personnel/CASUALTY/gwot_reason.pdf

item for which the board has been designed is included on the USML. Alternatively, DDTC may wish to amend the definition of "technical data" in 22 C.F.R. §120.10, to clarify this point. Another approach would be to address the issue clearly in Category XI (Military Electronics), to explicitly cover all printed board designs related to defense articles.

VI. Conclusion

IPC supports the State Department's goal of reforming the USML to clearly describe what items it covers. However, in order to prevent the unintentional release of detailed design information about these items, the State Department should clarify that printed circuit board designs remain under the jurisdiction of ITAR when the end item for which the board is designed is a USML item.

Thank you again for the opportunity to comment on the proposed amendments to USML Category VIII. If IPC can offer additional information or assistance, please contact Tony Hilvers at AnthonyHilversw@ipc.org or (847) 597-2837 or Fern Abrams at FernAbrams@ipc.org or (703) 522-0225.

Sincerely,

for
Anthony Hilvers
Vice President, Industry Programs

APPENDIX A

Table 1
Top 20 Purchasers of IPC Standards

	Customer	**Market Segment**
1.	Honeywell	Military / Aerospace
2.	BAE	Military / Aerospace
3.	Lockheed Martin	Military / Aerospace
4.	General Dynamics	Military / Aerospace
5.	NASA Marshall	Military / Aerospace
6.	Flextronics	EMS
7.	Jabil	EMS
8.	Sony Ericsson	Communication
9.	Northrop Grumman	Military / Aerospace
10.	Boeing	Military / Aerospace
11.	Textron	Military / Aerospace
12.	MSSD	Military / Aerospace
13.	EADS	Military / Aerospace
14.	UTC	Military / Aerospace
15.	Plexus	EMS
16.	MSUG/GBMUAA	Military / Aerospace
17.	Raytheon Co	Military / Aerospace
18.	Sanmina-SCI	EMS
19.	Dell Computer	Computer
20.	Rockwell Collins	Military / Aerospace

Alcoa

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December 22, 2011

BY E-MAIL

Charles B. Shotwell, Director
Office of Defense Trade Controls Policy
Directorate of Defense Trade Controls
U.S. Department of State
SA-1, 12th Floor
2401 E Street NW
Washington, DC 20522-0112
DDTCResponseTeam@state.gov

ATTN: **ITAR Amendments – Category VIII**

RE: Alcoa Inc. – Comments on Proposed Revision of USML Category VIII

Dear Mr. Shotwell:

Alcoa Inc. ("Alcoa") appreciates the invitation to comment on the Department of State, Directorate of Defense Trade Controls' ("DDTC") November 7, 2011 proposed amendment to the International Traffic in Arms Regulations ("ITAR") to revise Category VIII (aircraft and related articles) of the U.S. Munitions List ("USML").[1] DDTC's stated goals of the proposed revisions to USML Category VIII are to establish a clearer line between the USML and the Commerce Control List ("CCL") regarding controls over military aircraft and related articles, and to narrow the types of aircraft and related items controlled on the USML to only those that warrant control under the stringent requirements of the Arms Export Control Act. Alcoa offers the following comments and suggestions to assist DDTC in ensuring that the final rule amending Category VIII meets its articulated goals.[2]

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[1] Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII, 76 Fed. Reg. 68694 (Nov. 7, 2011).

[2] Alcoa is concurrently submitting comments to the Department of Commerce's related proposed rule, Revisions to the Export Administration Regulations (EAR): Control of Aircraft and Related Items the President Determines No Longer Warrant Control Under the United States Munitions List (USML), 76 Fed. Reg. 68675 (Nov. 7, 2011).

I. Alcoa Inc. and Alcoa Fastening Systems

Alcoa Inc. is the world leader in the production and management of primary aluminum, fabricated aluminum products and alumina. Alcoa has 59,000 employees spread over 31 countries and reported 2010 revenue of $21 billion. Through its Alcoa Fastening Systems ("AFS") business unit, Alcoa designs and manufactures fasteners, fastening systems and installation tooling used in civil and military aerospace applications worldwide. AFS sells nearly $1 billion dollars annually in fasteners used in all forms of aircraft, civil and military.

II. Fasteners and Fastening Systems

Fasteners and fastening systems used in aerospace applications can range from relatively simple hardware devices, such as nuts, bolts, lockbolts, and screws, to more complex multi-component fasteners and fastening systems, such as panel fasteners, blind fasteners, and latches.[3] Their primary function, however, is always the same – they are used to join together the aircraft's parts and components. Because they simply hold things together, they perform the same function regardless of the components they connect, and their ultimate utility is independent of the end-item in which they are installed.

Generally, fasteners used in civil and military applications are functionally interchangeable, as the materials used on aircraft (*e.g.*, steel, titanium alloys, aluminum, and composites) are generally the same, regardless of whether they are civil or military end-items. The same kinds of fasteners developed from common principles are used in the same applications on civil and military articles: threaded bolts or lockbolts are used in structural applications such as wings and air frames, panel fasteners are used to fasten panels to some structure to allow repeated access, and blind fasteners are used when access for installation is only available from one side. Additionally, many of the original designs for aerospace fasteners are decades old and conform to consensus standards and/or established industry specifications and standards. Only in rare instances would the military or civilian nature of an aircraft application materially affect the design of the fastener. Rather, in most cases, AFS designs, configures or otherwise modifies aerospace fasteners through combinations of standard, generic features. Such combinations may be specific to a fastener used exclusively on a military aircraft, although they would have equal utility on civil aircraft. Examples of such scenarios include:

- A particular configuration of an otherwise standard titanium bolt is upgraded to Inconel 718 (a different raw material) for use on a low-observable military aircraft. While that particular configuration, using Inconel 718, may be unique to that aircraft, it does not possess any low-observable characteristics, and other bolts in similar forms made with Inconel 718 are commonly used on civil aircraft.

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[3] AFS product lines commonly used by both civil and military aerospace customers include: blind bolts, blind rivets, fluid fittings, inserts and studs; installation and removal tools; latching systems; nuts; panel fasteners; pin fastening systems, bolts and screws; and lockbolt fastening systems. *See* AFS product brochure, *available at*: http://www.alcoa.com/fastening_systems/en/pdf/Aerospace_Products_Brochure.pdf.

- A standard stud bolt used in a panel fastener made from alloy steel and commonly coated with cadmium is instead coated with a standard dry film lubricant for use on a military aircraft. The dry film lubricant increases the lubricity of the stud bolt at a higher cost, but does not change the basic function of the part and would have equal application on a civil aircraft.

- A fluid fitting connector commonly made in Imperial sizes for both civil and military aircraft is reconfigured into metric sizes for use on a military aircraft to meet a European Union policy mandating the use of metric-sized parts on military aircraft. The metric fitting does not change the function of the connector.

- A latch used on civil and military aircraft is modified to adjust the preferred release pressure or to change the curvature to match the curvature of a military end-item. The latch as configured may be unique to the military aircraft, but does not incorporate technology or materials that are materially different to latches used on civil aircraft.

- A generic insert made from alloy steel with a "V"-shaped thread form (Mil-S-7742) is modified for use on a military aircraft to be made from A-286 stainless steel and with a "J"-shaped thread form (AS8879), in order to improve fatigue resistance. A similar, but not identical, insert made from the same A-286 stainless steel and with a "J"-shaped thread is used on a civil aircraft, and could be substituted for the military insert.

As discussed below, it is Alcoa's understanding that DDTC does not intend to control on the USML aerospace fasteners and fastening systems that are designed, modified, or configured as described above.

III. Specific Comments on Proposed Revisions to Category VIII

Alcoa's understanding of the proposed rule, based on the Federal Register notice and Alcoa's past correspondence with DDTC on jurisdictional matters regarding aircraft fasteners, is that DDTC intends to control in Category VIII of the USML only those fasteners with unique characteristics designed to reduce the radar signature of the low-observable aircraft set forth in proposed Category VIII(h)(1). All other aircraft fasteners and fastening systems would be subject to the Export Administration Regulations ("EAR"). This understanding, however, depends in large part on the definition of "specially designed" ultimately adopted by DDTC and the Department of Commerce's Bureau of Industry and Security ("BIS"), and Alcoa accordingly respectfully suggests that the final, coordinated definition of "specially designed" expressly address controls on fasteners.

Based on the definition of "specially designed" proposed by DDTC on December 10, 2010,[4] Alcoa submits that only aircraft fasteners designed to incorporate stealth characteristics would be controlled in Category VIII of the USML, because only these fasteners have properties that: (a) distinguish them for a predetermined purpose (*e.g.*, enhancing the reduced-observable qualities of stealth aircraft); (b) are potentially directly related to the functioning of the aircraft (*e.g.*, by enhancing the reduced-observable qualities); and (c) would be used exclusively or predominantly in an aircraft enumerated in proposed Category VIII(h)(1).[5] Conversely, the definition of "specially designed" proposed by BIS on July 15, 2011,[6] expressly excludes "single, unassembled" fastener parts, presumably including those designed to incorporate stealth characteristics.[7]

Although the definition of "specially designed" is still under consideration by DDTC and BIS, Alcoa respectfully requests that, to further DDTC's stated goals in revising USML Category VIII, the definition the agencies ultimately adopt either: (1) expressly exclude fasteners and fastening systems (*i.e.*, combinations of the single, unassembled fastener parts set forth in BIS's proposed definition) altogether; or (2) expressly exclude fasteners and fastening systems except to the extent they feature unique characteristics designed to reduce the radar signature of the low-observable aircraft set forth in Category VIII(h)(1). Such a precise definition would prevent the unintended consequence of inadvertently capturing on the USML fasteners and fastening systems that are functionally interchangeable in civil and military applications, but which may only be in use on military aircraft described in Category VIII(h)(1).

IV. Conclusion

Alcoa appreciates DDTC's significant efforts in revising the USML and affording industry the opportunity to provide input. We hope that our suggestions with respect to controls on aerospace fasteners assist DDTC in its effort to create a "positive list" of controlled defense articles.

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4 75 Fed. Reg. 76930, 76934 (Dec. 10, 2010).

5 While Alcoa presently treats fasteners that incorporate space-compatible lubricants as ITAR-controlled, such fasteners do not appear to be covered by the proposed revisions to Category VIII. Should DDTC wish to control such fasteners on the USML, Alcoa respectfully suggests that they be specifically enumerated in Category XV.

6 76 Fed. Reg. 41958, 41980-81 (July 15, 2011).

7 *Id.* at 41981 (proposed 15 C.F.R. § 772.1, section (d)(1) of definition of "specially designed").

Should you have any questions or require further information, please do not hesitate to contact the undersigned at (724) 337-2071.

Respectfully submitted,

TJ Adcock
Director, Global Trade Compliance

NATIONAL ASSOCIATION OF Manufacturers

Franklin Vargo

Vice President
International Economic Affairs

December 22, 2011

The Honorable Ellen Tauscher
Under Secretary of U.S. Department of State
Arms Control and International Security
Washington, DC 20230

Re: ITAR Amendments - Category VIII (RIN 1400-AC96)

Via email: DDTCResponseTeam@state.gov

Dear Ms. Tauscher:

The National Association of Manufacturers (NAM) welcomes the opportunity to comment on amendments to the International Traffic in Arms Regulations (ITAR) and revisions to the United States Munitions List (USML) Category VIII (Aircraft & Related Parts).

The NAM is the nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states. Our members play a critical role in protecting the security of the United States. Some are directly engaged in providing the technology and equipment that keep the U.S. military the best in the world. Others play a key support role, developing the advanced industrial technology, machinery and information systems necessary for our manufacturing, high tech, and services industries.

We commend the State Department and the Administration for undertaking this significant exercise to create a positive list out of the USML. We hope such changes will better focus limited resources on protecting those items that are truly sensitive, end jurisdictional confusion, bolster interoperability with our allies, and provide greater clarity both for the exporters who need to comply with the regulations and for the government officials who administer and enforce them.

The NAM supports the State Department in its attempt to rationalize the USML and include only the types of aircraft and related items that warrant control under the ITAR and the Arms Export Control Act (AECA). We appreciate the Department's stated objective to excise from the USML generic parts, components, accessories and attachments that do not provide a significant military advantage to the United States on their own, even if they are specifically designed or modified for a defense article. The new 600 series controls in the Commerce Department's Commerce Control List (CCL) will continue to provide appropriate and robust controls on those items that warrant review.

The NAM is concerned, however, about the potential for a significant increase in regulatory complexity for defense exporters after items are shifted from the USML to the CCL. If not managed properly, the net result could leave U.S. defense exporters grappling with two military lists, two sets of regulations and a possible third category eligible for the Strategic Trade Authorization (STA) exemption. This scenario seems to run counter to the principal goals of the President's export control reform initiative: predictability, efficiency and transparency. We encourage the Administration, as it moves toward finalizing these proposals, to consider these goals and the new system's impact on manufacturers who will be working to implement and comply with the controls.

The NAM continues to encourage the Administration to harmonize and clarify key definitions across the relevant regulations, including definitions for "military aircraft" and "build-to-print technology." The concurrent Commerce Department proposed rule (76 FR 68675) includes a definition of "build-to-print technology" that is different in some respects to the existing definition of "build-to-print" in the ITAR §124.13. Inconsistent definitions between the two export control regulations pose a compliance risk.

The definition for "specially designed" is of particular concern to manufacturers. The term is used more than a dozen times in the proposed revision to Category VIII (Aircraft & Related Parts), and it is difficult to accurately characterize the impact of these revisions without that key definition in place. The proposed definition published in the December 2010 Advance Notice of Proposed Rulemaking (ANPRM) stated that a "specially designed" USML item must have properties that distinguish it for certain predetermined purposes and must relate directly to the function of the defense article. The Administration should include this bright line in its next proposed definition. The Administration should also consider including separate criteria for parts, components, accessories and attachments in any definition of "specially designed" instead of grouping these four distinct categories together. A part's unique qualities are its form and fit, given its design is based on specific limitations related to the higher-level item into which it is designed to fit. The design of a component, on the other hand – its form and fit – is not necessarily dependent on the item with which it will be associated. Rather, it is dependent on function. When a part is considered "specially designed," its form and fit should be the relevant criteria. For a component, it should be the component's unique function to the item with which it will be associated.

We encourage the State Department to withhold publication of any revised final rules for USML categories until industry has had the opportunity to comment on the new definition of "specially designed." We are eager to see a new proposal for that definition in early 2012.

The NAM has additional concerns about particular definitions that are specific to Category VIII. The definition for "aircraft" in §121.3(a)(4) includes strategic airlift aircraft capable of airlifting certain payloads over a certain distance into short or unimproved airfields. The definition does not, however, provide definitions for "strategic airlift aircraft" or for "short fields." The North Atlantic Treaty Organization (NATO) definition of a short take-off is to clear a 50-foot tall obstacle within 1500 feet of commencing take-off run. A short field, though, is not defined. Carrying a large amount of cargo a long distance and landing on a short runway does not appear to be a uniquely military operation. More objective criteria for military cargo aircraft could include a reference to rear-facing cargo door that can be opened in-flight for the purpose of dropping or extracting cargo as opposed to simply landing on a short runway.

The NAM recommends that the description of "aircraft" in Category VIII(a), in §121.1, be revised to provide a distinction between manned and unmanned aircraft, to avoid potential classification in multiple sub-categories.

The NAM further recommends that USML Category VIII only control parts and components that are directly related to the Low Observable (LO) functionality of an aircraft, rather than identifying specific aircraft. This will help ensure future flexibility in the control of parts and components designed for a particular platform. Capturing items in LO aircraft that are common in non-LO aircraft could result, for example, in fighter aircraft manufactured in the same factory with common parts and components to be subject to separate regulatory regimes.

In conclusion, the NAM commends the Administration for moving forward with an ambitious export control reform initiative. Successful modernization of the U.S. export control system should focus both on "what" is controlled as well as "how." As the interagency task force continues its work

on identifying appropriate levels of control for goods and technologies, we also encourage the Administration to move forward simultaneously on reforming and streamlining the mechanisms used to manage licensing. Specifically, we recommend that the Administration adopt a program licensing regime that dramatically reduces the number of licenses required to support U.S. government defense and security programs. We also urge the Administration to complete its plan to consolidate 13 separate Defense Department technology review boards and begin managing the output of the review boards for clarity, consistency, transparency, and timeliness. Streamlining and strengthening the technology release process should be an integral part of the overall reform effort. The new process should provide greater predictability for U.S. industry and thereby enhance our ability to support U.S. security cooperation priorities.

We look forward to more clarity on key definitions. The proposed revisions – particularly a new definition of "specially designed" – on parts like nuts, bolts, screws, rivets and other fasteners will have a major impact on so-called "third tier" manufacturers. It is our understanding that many fasteners and forgings, even those that were specially designed for military aircraft, will likely shift over to the CCL and the jurisdiction of the Export Administration Regulations (EAR). The CCL's flexible controls will facilitate an increase in foreign sales of those parts to our friends and allies.

The NAM appreciates this opportunity to provide comments on the proposed framework and is eager to see it implemented, with due consideration for the various sectors, industries and items that will be significantly impacted. We look forward to continuing to work with the State Department and its partners on this initiative.

Thank you,

Frank Vargo

FV/la

RIN-1400-AC96
December 22, 2011

Semiconductor Industry Association Comments on Proposed Revision of U.S. Munitions List Category VIII

The Semiconductor Industry Association ("SIA") is the premier trade association representing the U.S. semiconductor industry. SIA is made up of over 60 companies that account for nearly 90 percent of the semiconductor production of this country. SIA members are America's top exporting industry, with 82 percent of their sales outside the United States; accordingly, access to growing markets is critical for the viability of the industry.

SIA is pleased to submit the following comments in response to the request for public comments issued by the U.S. Department of State on proposed revisions to Category VIII of the U.S. Munitions List ("USML") ("Proposed Revisions").[1]

I. Summary

SIA's concerns regarding the State Department proposal are focused on the treatment of components generally and ICs in particular. The Proposed Revisions do not address some of the key export control anomalies for integrated circuits ("ICs"), such as their treatment as end items rather than components. However, the Proposed Revisions do offer a useful definition of "specially designed" – a term that surely will have a far-reaching impact on the export control treatment of ICs.

SIA maintains that the export control status of ICs should be determined in accordance with one overarching principle and two control criteria: The overarching principle is that each IC's control status should be determined entirely by the control status of the end item into which the IC is to be incorporated. ICs have no utility or impact standing alone and, by definition, are not end items. The two control criteria for ICs are (1) only ICs that are designed or developed to be employed in a specific application should be controlled, and (2) only application-specific ICs that are tied directly to a controlled element of an end item should be controlled.

The draft definition of "specially designed" put forward by the State Department in the Proposed Revisions is largely consistent with the above principle and control criteria and for that reason can serve as a good point of departure for any unified definition of that term in the Administration's export reform initiative. The State Department definition is straightforward and tied directly to the common understanding of the words "specially designed." To be sure, certain minor modifications and clarifications to the State Department definition are needed (including specific

[1] Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII, 76 Fed. Reg. 68,694 (Nov. 7, 2011) ("Proposed Revisions").

clarifications for ICs), but the basic structure of the definition is sound and should be employed to develop a unified definition of the term "specially designed" for both the USML and the Commerce Control List ("CCL").

In any event, the State Department definition is more reasonable and practical than the definition recently announced by the Commerce Department. [2]

Lastly, ICs alone should not be classified as defense articles and hence subsection (d) of Category XV of the USML setting forth certain radiation hardened ICs should be eliminated.

II. Introduction

The Administration's initiative to remove items currently listed on the USML that no longer warrant control under the International Traffic in Arms Regulations ("ITAR") is welcome. Effective reform of export controls for integrated circuits ("ICs") will facilitate U.S. leadership in information technology to the benefit of national security and U.S. growth and prosperity.

The Advanced Notice of Proposed Rulemaking ("ANPRM") emphasized that the most significant of the proposed revisions is that it establishes a positive list for parts and components with the only exceptions pertaining to certain "specially designed" parts and components.[3] SIA agrees with the State Department that, as a general matter, a positive listing of controlled components should be the norm. However, since no ICs are identified on a positive list for Category VIII of the USML – and this is likely to be the case with most other USML categories -- SIA will focus its comments on the definition of "specially designed."

SIA agrees with the State Department that the agency should employ "specially designed" as a control criterion only under exceptional circumstances. Nevertheless, SIA recognizes (as does the State Department) that there is likely to be a need for a residual, "catch all" category of controlled components that cannot be included on any positive listing of controlled items. It is with respect to this residual listing of components that the definition of "specially designed" will be critical.

In addressing export controls applicable to ICs, the State Department should keep in mind that the underlying technology associated with such devices and the most advanced applications to which ICs are put are now driven overwhelmingly by consumer products. While utilizing semiconductor technology, the defense sector accounts for only a small fraction of U.S. semiconductor output, and military items rarely utilize the most advanced semiconductor technology.

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[2] Proposed Revisions to the Export Administration Regulations (EAR): Control of Items the President Determined No Longer Warrant Control Under the United States Munitions List (USML), 76 Fed. Reg. 41,958 (July 15, 2011) ("Commerce Proposed Revisions").

[3] Revisions to the United States Munitions List, 75 Fed. Reg. 76,935 (Dec. 10, 2010) (Advanced Notice of Proposed Rulemaking) ("ANPRM").

III. The Appropriate Control Status of Integrated Circuits

As a preliminary matter, all ICs are necessarily components. ICs have no utility or impact standing alone and can serve only as components to other items. Their functionality and impact depend entirely upon the item to which they are connected or incorporated. The derivative nature of ICs means that they should not be set forth on a control list as independent defense articles or dual use end items. Instead, the export control status of ICs should attach to that of the end items in which they are to be incorporated.

This approach to the control of ICs is wholly consistent with the principles of the export reform effort and the Administration's interest in making the control lists more focused and positive. By linking an IC to the end item in which it is to be incorporated, and in particular to the objective criteria of the end item that has led to the end item's inclusion on the USML, the State Department will not only gain a much stronger nexus between the control of ICs and national security sensitivity, but also clarify the USML and permit exporters to better and more easily determine the export control classification of ICs.

Consistent with establishing the necessary connection between a component and the end item into which it is incorporated, the definition of "specially designed" applicable to ICs should consist of two elements: (1) only ICs that are designed or developed to be employed in a specific application should be controlled, and (2) only application-specific ICs that are tied directly to a controlled element of an end item should be controlled.

A. **Only ASICs Should Be Export Controlled**

Export controls on ICs should be limited to custom-made or application-specific ICs ("ASICs"). In contrast to a general purpose IC, an ASIC or a custom-made IC is dedicated to a specific application, and, hence, has a compelling connection to the end item in which it is incorporated. The characteristics of an ASIC assure that there will be a distinct relationship between the IC and the end item.[4]

B. Export Controls on ASICs Should be Limited to Those ASICs Associated Directly With the Controlled Element of the End Item

An IC should be captured on a control list only if it is directly associated with enabling a military advantage or national security sensitivity of an end item as described in and through the objective criteria of the control list. Through imposition of a strict criterion related to the controlled technical parameters of end items, ASICs that provide benign functions that are separate from or contribute only indirectly to the functionality

[4] The longstanding definition of the JEDEC Solid State Technology Association for an ASIC is relevant and appropriate: "An integrated circuit developed and produced for a specific application or function and for a single customer." This definition captures a custom IC designed particularly to conform to a single customer's unique requirements. By utilizing existing industry terminology, exporters will have a clear basis upon which to classify an IC.

of a defense article, such as routine communications or memory capabilities, will not be captured as controlled components.

Application of this second control criterion will also assure that the control of an ASIC is based on the function or the utility of the IC as it relates to the controlled features of an end item, not merely on the form or fit of the IC. While end items have many specific requirements for ICs, including size, weight, pin-count, buses and connectors, such peripheral requirements are usually related to form and fit, and do not capture the actual function of the IC.

IV. The State Department's Definition of "Specially Designed" Is Reasonable and Serves As a Good Baseline for a Unified Definition of That Term

A. The State Department Definition

In its ANPRM,[5] the State Department made several points with which SIA agrees. First, SIA agrees with the State Department that the use of a Positive List for controlled items is preferable to the current situation and as a general matter will serve both the U.S. Government and exporters quite well.

Second, SIA agrees that it is difficult to construct a Positive List for all components, especially for a category as complex and diverse as ICs. Therefore, a Positive List will likely need to be supplemented with a residual, "catch-all" category of items that will be described qualitatively, rather than listed explicitly.

Third, SIA agrees that, in developing the residual category of controlled items that is parallel to but separate from the Positive List, the use of the term "specially designed" as a control criterion should occur only "when required by multilateral obligations or when no other reasonable option exists."[6]

Finally, SIA agrees with the State Department that in those situations in which "specially designed" must be employed because "no other reasonable option exists," that term must be given a definition that is consistent with the meaning of the words of the term, is readily understandable and effectively captures the relevant national security sensitivities. Subject to these caveats, all of which SIA supports, the State Department in the ANPRM put forward a definition of "specially designed."[7]

The definition of "specially designed" in the Proposed Revisions, which replicates the draft definition of "specially designed" provided in the December 2010 ANPRM, is as follows:

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[5] ANPRM at 76,939.

[6] Id.

[7] Id.

> *. . . the term "specially designed" means that the end item, equipment, accessory, attachment, system, component, or part (see ITAR §121.8) has properties that (i) distinguish it for certain predetermined purposes, (ii) are directly related to the functioning of a defense article, and (iii) are used exclusively or predominantly in or with a defense article identified on the USML.*[8]

While it could and should still be improved, this definition comes close to capturing the appropriate control criteria for components outlined above. What's more, the definition is eminently reasonable and practicable. Accordingly, this definition should serve as the foundation on which a final, unified definition of "specially designed" is built.

Unlike the "specially designed" definition proposed by the Commerce Department earlier this year,[9] the ANPRM definition is straightforward, meaningful, and relatively easy to apply. Furthermore, the definition of the term derives from the meaning of the words themselves.

B. **Required Modifications to the State Department Definition**

As noted above, any viable definition of "specially designed" applied to components must limit the applicability of that term to components that are application-specific (e.g., in the case of ICs, ASICs). The requirement that a component's design and development be specific to the end item in which it is to be incorporated for the component to be controlled is based upon the plain meaning of the word "specially." A component must be more than merely "designed" for an end item. Its design must have specific or extraordinary features that are distinct for the end item.

The ANPRM definition of "specially designed" stipulates that for an item to be "specially designed" it must have "properties that distinguish it for certain predetermined purposes." That requirement goes some distance to capturing the essence of SIA's first control criteria for ICs. However, in the context of components, "specially designed" should be ascribed only to items that are particular and specific to a certain application and not general purpose or multifunctional. In the case of ICs, this means ASICs or custom-made ICs. In the context of the ANPRM definition, it should be made clear that the "purpose" for which the component is designed is narrow and specific (such as reentry telemetry), rather than broad and generic (such as computing or navigation). Furthermore, items that are simply capable of being employed for a certain purpose should not be controlled unless they are actually designed with distinguishing features for that purpose.

The limitation of the "specially designed" designation to those items employed for "certain predetermined purposes" is appropriate and meaningful only to the extent that this is a true limitation. If this criterion captures only ASICs and custom-made ICs, then it is appropriate. Alternatively, if this criterion instead captures all devices employable to

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[8] Proposed Revisions at 68,695 – 68,696.

[9] Commerce Proposed Revisions at 41,980 – 41,981.

perform computing or navigation, then it is far too open-ended and will likely result in the inappropriate application of export controls on ICs that are multifunctional and generic. For that reason, the language of this element of the ANPRM definition should be tightened.

The second requirement for "specially designed" contained within the ANPRM definition – that an item must possess properties that are "directly related to the functioning of a defense article" -- is logical and reasonable. It is certainly the case that a component must possess qualities that are directly related to a controlled end item for the component to be worthy of control. Like the first criterion, this requirement could be usefully refined. A component that is "directly related" to a marginal or peripheral dimension of a defense article should not be deemed "specially designed" for the functionality of the defense article. For example, while it would be appropriate to place controls on an ASIC that is directly related to the firing mechanism of a tank, it would not be appropriate to place controls on an ASIC that is directly related to a simple gage for monitoring oil pressure.

Like the first and second elements, the third element of the ANPRM definition – that an item must possess properties that are "used exclusively or predominantly in or with a defense article" to be "specially designed" for that defense article – could benefit from further clarification. First, introducing a criterion based on use, rather than design *per se*, is unnecessary. An effective definition of "specially designed" should not have to go beyond design-based criteria. In many instances a use-based criterion is a poor proxy for design-based criterion. This is especially true when use is largely dependent upon the control status of an item. Various components that are currently incorporated into defense articles could easily and without modification be incorporated into purely commercial end items, yet the use of the components in non-defense articles is precluded by the simple fact that the components are export controlled. In short, a use-based criterion often can be self-reinforcing and circular.

A subservient, but still significant, problem with the third element of the ANPRM definition is the use of the term "predominantly." Insofar as "predominant" may be interpreted to mean "more than in any other," it is possible that this requirement could capture items that are used in a defense article in a minority or quite small proportion of the total applications.[10] Only if a component is incorporated into a defense article well over half of the time should the component be worthy of control.

In order to forestall these problems, the State Department should replace "used" with "designed" in the third element of the "specially designed" definition.[11] Alternatively, the agency could replace "predominantly" with "overwhelmingly."

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[10] If a component has four uses and the shares of those uses are 10%, 20%, 30% and 40%, then is possible that one could determine that the use accounting for 40% of total use is "predominant."

[11] It should also be emphasized that for ICs design is not simply an expression of intent. On the contrary, for ICs design is a tangible and objective layout of materials and circuits than can be assessed in the same way as the product itself.

In its Proposed Revisions, the State Department notes that it and the Commerce Department intend to develop a definition of "specially designed" that "would be common to the USML and the CCL." SIA strongly supports the adoption of a single, cross-cutting definition of "specially designed" for both the USML and the CCL. Maintaining two distinct definitions for the same term would needlessly undermine alignment of the two control lists and would be unnecessarily confusing. A single, unified definition of "specially designed" for both the USML and the CCL would avoid confusion and second-guessing on the part of both the U.S. Government and industry representatives as the process of moving items from the USML to the CCL progresses.

The ANPRM definition of "specially designed" set forth in the Proposed Revisions is logical and represents a sound foundation on which the State Department and the Commerce Department may build a final, unified definition of "specially designed." As SIA has previously indicated, the "specially designed" definition proposed by the Commerce Department earlier this year at least with respect to components is woefully deficient and flawed,[12] and hence that definition should not form the basis for any unified "specially designed" definition.

At the same time, the ANPRM definition, while certainly headed in the right direction, does need some important modifications and clarifications prior to adoption on a unified basis. Specifically, SIA recommends that the following modifications be made to the ANPRM definition:

> *. . . the term "specially designed" means that the end item, equipment, accessory, attachment, system, component, or part (see ITAR §121.8) has properties that (i) distinguish it for* ***a*** *certain predetermined* ~~*purposes*~~ ***and specific application****, (ii) are directly related to the functioning of a defense article* ***or end item enumerated on the CCL****, and (iii) are* ~~*used*~~ ***designed*** *exclusively or predominantly* ~~in or with~~ ***for*** *a defense article identified on the USML* ***or an end item enumerated on the CCL*****.**

In addition, SIA recommends that the following Note addressing ICs in particular be added to this definition:

> *Note: With respect to integrated circuits, this definition is intended to capture custom or application-specific integrated circuits ("ASICs"), as distinct from general or multipurpose devices.*

If these adjustments and IC-specific clarification are made, then the revised ANPRM definition of "specially designed" will capture the essence of SIA's control criteria for ICs outlined above, and will serve as a coherent and effective definition that can be applied uniformly throughout the USML and the CCL.

[12] Letter from SIA to U.S. Department of Commerce, RIN 0694-AF17 (Sept. 12, 2011).

V. Radiation Hardened ICs Should Be Controlled Only to the Extent That They Meet the Revised Definition of "Specially Designed" Provided Above and Should Be Moved from the USML to the Commerce Control List

Despite SIA's long established protest that ICs can serve only as components (not end items), the U.S. Government continues to control all radiation hardened ICs as defense articles or major end items under the ITAR. The treatment of radiation hardened ICs on the USML is misguided and should be corrected. There is no compelling reason why radiation hardened ICs should be treated any differently than all other types of ICs.

A. Radiation Hardened ICs, Like Other Types of ICs, Should Have Their Control Status Determined Entirely by Their Relationship to the End Items in Which They Are Incorporated

As is the case with all other types of ICs, radiation hardened ICs should have their export control status determined exclusively by the relationship between the ICs and the end items in which they are incorporated.

While the term radiation hardened initially may have been a design characteristic of USML items only, that is not the case today. The normal civilian manufacturing process for ICs has evolved whereby ordinary ICs simply from the process of scaling or getting smaller now exhibit some of the same radiation hardness characteristics that were a unique attribute 30-40 years ago in specially designed military circuits. The change in commercial technology is an unavoidable feature of technological progress. As circuit sizes shrink and civilian technologies advance, many commercial ICs are on a collision course with the outdated parameters of Category XV(d) of the USML.

In these circumstances, there is no compelling reason why radiation hardened ICs should be treated any differently than other types of ICs. If a radiation hardened IC is an ASIC that is dedicated to one of more of the control characteristics associated with an end item, then that it is appropriate for export controls to be associated with the radiation hardened IC. However, if an IC, whether radiation hardened or not, is not an ASIC that is dedicated to one of more of the control characteristics associated with an end item, then no export controls should be associated with that IC. That a device is radiation hardened should be irrelevant to its control status. Only device characteristics tied directly and inextricably to the controlled characteristic(s) of the end items in which the radiation hardened IC is incorporated should be relevant to the device's control status.

B. Even if the Definition of "Specially Designed" Proposed Above Is Not Adopted, Radiation Hardened ICs Should Not Be Listed as Defense Articles on the USML

Continuing progress in semiconductor technology has brought certain advanced civilian ICs close to some or all of the radiation hardness ("rad hard") parameters laid out in Category XV (d) of the USML, thereby potentially subjecting such devices to munitions controls. In July 2007, certain technical parameters in the USML were

adjusted to prevent civilian, general purpose integrated circuits from being controlled as defense articles.

While necessary and helping to maintain the competitiveness of the U.S. semiconductor industry, the July 2007 amendment has only prolonged the arrival of the day when high volumes of mass market ICs will once again qualify as defense articles. Thus, due to the march of technology yet another adjustment to the rad hard parameters of the USML will become necessary.

Continually adjusting the technical parameters of the USML is shortsighted and ineffective. It is shortsighted because it maintains a treadmill for control changes that are unrelated to national security concerns, driven instead by civilian technology trends. It is ineffective because civilian technology trends are not the basis for incorporation of components into defense articles for military or space applications. A permanent solution is required.

Instead of adjusting the technical parameters of the USML every few years, this last remaining aberration where ICs are treated as defense articles should be eliminated. The control of ICs on the USML, like the CCL, should be determined by a "specially designed" definition tied to the particular defense articles in which the IC is incorporated.

* * * * *

SIA appreciates the opportunity to comment on the Proposed Revisions and looks forward to continuing its cooperation with the U.S. Government on this subject. Please feel free to contact the undersigned or SIA's counsel, Clark McFadden of Dewey & LeBoeuf LLP, if you have questions regarding these comments.

Cynthia Johnson
Co-Chair, SIA Trade Compliance Committee

David Rose
Co-Chair, SIA Trade Compliance Committee

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22nd December 2011

Office of Defense Trade Controls Policy
US Department of State
Washington, DC, 20522-0112
United States of America

Dear Sir,

Regulatory Changes — Proposed Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII

On 7th November 2011 the US Federal Register requested that any interested parties feed any comments into the US State Department on the proposed regulatory changes pertaining to the implementation of the Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII, for your consideration, by Thursday 22nd December 2011.

This response is provided by the Export Group for Aerospace and Defence (EGAD), on behalf of UK Industry, to these proposals. EGAD is a non-profit making special interest industry group focusing exclusively on all aspects of export and trade control matters, and is the only dedicated national industrial body in the UK dealing exclusively with export control issues. EGAD operates under the joint auspices of the ADS Group Ltd (A|D|S), the British Naval Equipment Association (BNEA), INTELLECT and the Society of Maritime Industries (SMI).

We have been watching from the UK as the plans have been announced and progressed for the on-going overhaul of US export controls over the last 2 years, or so, with great interest. We strongly support the plans for the proposed reforms, from the viewpoint of UK Industry, and are aware that other Industry trade bodies, in other EU Member States (and I am convinced further afield) have equally been watching what has been happening with great interest.

EGAD welcomes the opportunity to comment on the Department of State's proposed revised rule on "US Munitions List Category VIII", as well as the fact that the US Department of State is so actively seeking to amend the ITAR rules.

We feel that, certainly from the viewpoint of UK Industry (as well as other international companies), that the proposals, as outlined on 7th November are totally non-contentious, although they are not seemingly as extensive as we might have liked them to have been. We have no comments on the principle of what is proposed, but merely have queries on practical issues, which will arise.

The dropping of the need to seek retransfer authority seems reasonable, in our view, for those items to be moved from the Munitions List to the 600-series, and we feel that the exception for spares is very helpful.

The proposed introduction of a de minimis rule for these items is extremely helpful, indeed, for very many companies across the World, but there will continue to remain an issue on the provision of spares to support equipment which has been sold to overseas customers.

There are some areas in which further clarification is still needed, which is currently lacking; for instance what are the record-keeping requirements when making use of the de minimis rule? Another area in which clarification is essential is with regard to legacy items which had been acquired by an entity prior to the introduction of this proposed rule change, and how they will be impacted by this – naturally we would urge the US Governments to seek to ensure that this proposed new rule in fully retrospective.

Also, towards the end of the announcement it is stated:

"4. Section 121.3 is revised to read as follows:

Sec. 121.3 Aircraft and related articles.

(a) In Category VIII, except as described in (b) below, ``aircraft'' means developmental, production, or inventory aircraft that:

(1) Are U.S.-origin aircraft that bear an original military designation of A, B, E, F, K, M, P, R or S;
(2) Are foreign-origin aircraft ``specially designed'' to provide functions equivalent to those of the aircraft listed in (a)(1) of this section;....."

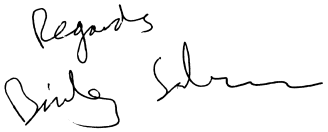
It has to be queried why aircraft with an original military designation of "C" have been excluded from this.

Under 4a1 (above) should it be (for the removal of any doubt) "*Are U.S.-origin aircraft that bear an original military designation of A* ***or*** *B* ***or*** *E* ***or*** *F* ***or*** *K* ***or*** *M* ***or*** *P* ***or*** *R or S"*?

Do these new regulations impact on non-US aircraft which contain US-sourced components?

Clarification and consistency, especially on definitions, are essential.

We hope that the above comments may assist the US State Department in its endeavours on this.



Brinley Salzmann - Secretary, EGAD

December 21, 2011

Department of State
Bureau of Political-Military Affairs
Department of Defense Trade Controls
2401 E Street, N.W.
12th Floor, SA-1
Washington, D.C. 20522

ATTN: Charles B. Shotwell
Director, Office of Defense Trade Controls Policy

RE: Notice of Proposed Rulemaking, RIN 1400-AC96, 76 FR no. 215
(November 7, 2011) Revision of USML Category VIII

Dear Mr. Shotwell:

The Aerospace Industries Association (AIA) and our member companies appreciate the opportunity to comment on the Department of State's proposed amendments to the International Traffic in Arms Regulations (ITAR). Revising Category VIII (aircraft and related articles) of the U.S. Munitions List (USML) to describe more precisely which military aircraft and related defense articles warrant control on the USML, will create a "positive" list which will result in a more predictable, efficient, and transparent export control system. Additionally, creating new classifications on the Commerce Control List (CCL) will ensure proper oversight is established for items moving from the USML to the CCL. AIA has long been a champion of sensible export control reform and we are encouraged the Administration shares this priority.

It should be noted that Category VIII is closely related to Categories XI (military and space electronics), XII (fire control, range finder, optical and guidance and control equipment), and XIX (gas turbine engines). A successful export control reform effort will address the symbiotic relationship of USML categories. In this regard, AIA and its members may amend our attached comments once we have an opportunity to see the draft revisions to these other categories.

AIA and our member companies would like to particularly highlight the importance of section 121.1(h)(1). Capturing parts and components of aircraft with reduced signature that are common in other aircraft because they are specially designed for the latter could result in increased compliance risk. To minimize this potential risk, AIA offers an amendment to the

proposed 121/1(h)(1) language (see below). It is critical that industry and the U.S. Government can come to an agreement on this section.

In addition to the ambitious control list review process, AIA continues to encourage adoption of other licensing reform priorities, including "Program Licensing" and exemptions for spare parts replacement and support for U.S. Government activities, as the Administration pursues comprehensive export control reform. These licensing management initiatives will complement the control list changes contained in the proposed rule and will help facilitate strategic trade with our close allies and partners, strengthen important international partnerships, and create jobs and economic opportunities at home. AIA and our member companies thank the Administration for their tireless efforts to implement export control reform.

Below please find AIA's comments and suggested revisions of the proposed ITAR amendments:

Definitions:

- Clarify the Definition of "End Items" and "Major Components"

The definition of terms in the International Traffic in Arms Regulations ("ITAR") §121.8, should be revised to distinguish whether items designed to be integrated into a platform requiring "only a power source to place it in an operating state" are considered "end items" or "major components". The regulation also should include additional definitions as currently used in industry – such as "platform", "system" and "sub-system" - to illustrate clearly the treatment of items in the ITAR.

- Harmonize Key Definitions Between ITAR and EAR

State and Commerce departments should coordinate to assure that these terms and other key terms necessary for proper regulatory interpretation should be the same in both sets of regulations. Currently the Commerce Department proposed rule (RIN 0694-AF36,(76 FR 68675, November 7, 2011) includes a definition of "build-to-print technology" that is different in some respects to the existing definition of "build-to-print" in the ITAR §124.13. Inconsistent definitions between the two export control regulations pose a compliance risk.

Proposed Regulations:

The current proposed regulations cite components, parts, accessories, attachments, and equipment for specific aircraft (example B-1B, B-2…). Specifying the type of aircraft creates a "catch-all" for parts/components etc when only the highly sensitive part/components of such aircraft should be controlled on the USML. Aircraft with reduced observability and conventional aircraft potentially contain parts and components that are common to both aircraft. As written, it appears the rule would capture these common parts and components under the ITAR for the aircraft with reduced observability (e.g. F-35), despite not having intrinsic reduced observable properties. Hence the jurisdiction would need to be determined by the end aircraft as opposed to the part or component itself. As proposed, fighter aircraft produced by two manufacturers (

again sharing common parts and components) could now also face different regulatory regimes favoring one fighter over another in the international market. The unintended consequence of the proposed set-aside is increased compliance risk. Below is a proposed revision.

121.1(h) Components, parts, accessories, attachments, and associated equipment directly related to commodities controlled by §121.1(a), as follows:

(1) Components, parts, accessories, and attachments "specially designed" to reduce observability of aircraft enumerated in (a)(1) thru (a)(12) of this section (including developmental aircraft and/or United States Government technology demonstrators) using features or methods not in the public domain (§120.11). Items that reduce observability of the aircraft only through plan form alignment, unless listed below, are subject to the jurisdiction of the Export Administration Regulations. Observability reduction (aka signature reduction) includes any part of the spectrum (e.g., radio frequency, infrared, electro-optical, visual, ultraviolet, acoustic and magnetic);

Designating that parts, components, accessories, attachments, equipment, or systems that are manufactured using either classified production data or are developed using classified information on the USML, is problematic in that the exporter may not have any means by which to know the origin of the design if the items themselves are unclassified. Below is a proposed revision.

121.1 (19) Any component, part, accessory, attachment, equipment, or system that:
(i) is classified;
(ii) contains classified software;
~~(iii) is manufactured using classified production data; or~~
~~(iv) is being developed using classified information.~~

We note that the proposed definition of Aircraft in 121.3(a)(1) does not include military aircraft with the "C" (Cargo) designation and concur that cargo aircraft should not be subject to control under the USML. However, cargo aircraft with specific "strategic airlift" capabilities set forth in (a)(4) of this section will continue to be controlled. We believe that these aircraft are more appropriately controlled on the CCL, when they do not include systems controlled on the USML, such as the capability for air-to-air refueling. Control on the CCL would continue the requirement to obtain licenses for the export of such aircraft.

As to the specific performance criteria listed in the proposed rule for strategic airlift aircraft, the capability to land into unimproved or short airfields in aircraft capable of airlifting payloads over 35,000 lbs to ranges over 2,000 nm is not unique to military aircraft and should not be considered for purposes of defining strategic airlift aircraft. Including control parameters in Part 121.3 instead of within the text of Category VIII under section 121.1 would require exporters to consult two separate areas within the regulations, unnecessarily increasing complexity and the possibility for compliance issues for exporters.

To assist in the differentiation of "strategic" aircraft from commercial aircraft, we recommend that the performance criteria be changed from "unimproved or short airfields" to "unimproved and short airfields". To conclusively differentiate between "strategic" aircraft and commercial aircraft, we recommend that this definition include the following text at the end of

the control paragraph: "(....short or unimproved airfields), and are specially designed or modified for military application."

When defining "mission system" under 121.3(a)(6) it is important to incorporate qualifying language. Further qualification/clarification of the "mission system" terminology in the proposed rule is necessary to ensure the proposed regulation will have the intended result. Without the limiting language, a commercial aircraft with the remnants of an ITAR-controlled mission system (e.g., FLIR wiring) could remain ITAR controlled until each nonspecific support element was removed from the aircraft. Suggested revision is below:

> 121.3(a)(6) - Incorporate the essential elements of any ''mission systems'' controlled under this subchapter. ''Mission systems'' are defined as ''systems'' (see § 121.8(g) of this subchapter) that are defense articles that perform specific military functions beyond airworthiness, such as by providing military communication, radar, active missile counter measures, target designation, surveillance, or sensor capabilities.

Additionally, the broad definition of "system" provided for under 121.8(g) combined with the "mission systems" definition under 121.3(a)(6) does not clearly define at what point the combination of end items and/or component become classifiable as a "mission system". Guidance or further clarification on the weighting or criteria applied to the designation of the determination of a "mission system" would aid in the proper classification, for example, of a commercial aircraft modified with an ITAR controlled mission system whereby the same mission system is subsequently removed to a degree allowing the unmodified aircraft to return to EAR controls.

Further, if the remnants of ITAR controlled "mission systems" preclude the commercial aircraft's return to EAR controls, members of the aerospace community will be forced to consider services on civil aspects of the otherwise commercial aircraft as a defense service. This would cause a licensing burden on both manufactures and service providers, but also on the Department of State.

The proposed regulations capture lithium-ion batteries that provide 28 VDC or 270 VDC on the USML. Lithium-ion batteries are not uniquely military and should be placed on the CCL. We suggest section 121.1(h)(13) be deleted.

With regard to the lack of objective parameters for military unmanned aerial vehicles (UAVs), AIA offers below revised versions of the proposed rules, Category VIII, sub-paragraphs (a)(5) and (a)(6), including military UAVs that would not be considered Significant Military Equipment ("SME"). We further recommend that UAV Ground Control Stations specially designed for a military UAV that have the capability to process data collected by military electronics on the UAV, be specifically identified within Category VIII, and have proposed additional entries to cover the ground control stations.

We believe that any unmanned aerial vehicle ("UAV") specially designed for a military application which is not in MTCR Category 1, and does not include any specially designed capability covered by the USML, should be transferred to the proposed Commerce Munitions List ("CML") ECCN 9A610.a, or existing ECCN 9A012. The proposed rule did not specifically

address whether ECCN 9A012 would be eliminated in the same manner as 9A018. We recommend including specific language in the final rule including those unmanned aerial vehicles covered on the CCL in Category 9A012 or added to the proposed 9A610.

Optionally Piloted Vehicles (OPV) without the avionics and software installed that allow the aircraft to be flown unmanned should be considered manned aircraft for evaluation under the ITAR in Category VIII. OPV's including the unmanned avionics and software, andoperated as a UAV or optionally piloted aircraft should be evaluated as a UAV using the criteria proposed for UAV's in Category VIII.

With rapid and continuous advancement in UAV technology we would support the formation of a working group between the Departments of State/Commerce and industry so that UAVs/UAV technology can be continuously evaluated for appropriate export control.

Additionally there are current exemptions on the USML that are critical to efficient defense trade. There is an exemption under Section 123.16(b)(9) for the export of unclassified parts and components to a U.S. company's foreign subsidiary if the item will be used for manufacture, assembly, testing production, or modification. Unfortunately there is no parallel license exception in the EAR for intra-company transfers. If a USML item does not need a license to be sent to Country X, then that same item should not need a license to travel to Country X under the CCL. AIA encourages the Department of Commerce to enact similar licensing exemptions on the CCL for former ITAR items that currently enjoy such exemptions on the USML.

AIA has long been a champion for sensible export control reform and we commend the Administration for their tireless efforts to achieve meaningful reform. Please know that AIA is a willing and committed partner to reform efforts going forward. Additional member company comments can be found on the next page.

Best regards,

Remy Nathan
Vice President, International Affairs
Aerospace Industries Association

Additional AIA member company comments:

Comments:

1. An AIA member company recommended identifying tilt rotor aircraft on the enumerated listing of aircraft found under Category VIII(a). The aerospace industry considers tilt rotor aircraft a unique combination of both a utility helicopter and fixed wing aircraft.

   While a tilt rotor aircraft may be provided for under a descriptive provision (e.g., 121.1(a)(11): Aircraft equipped with any mission systems controlled under this subchapter), a specific enumeration of tilt rotor aircraft would alleviate a perceived gap in controls governing this class of aircraft.

   For example, the EAR includes "tilt rotor or tilt-wing airborne aircraft" under the definition of "aircraft" at 15 CFR § 772.1. A similar identification of military tilt rotor or tilt wing aircraft in the ITAR would create a unified terminology between the regulations and ensure a potential gap is filled.

NORTHROP GRUMMAN

Northrop Grumman Corporation
Export / Import Shared Services
2980 Fairview Park Drive
Falls Church, VA

December 22, 2011

Department of State
Bureau of Political-Military Affairs
Department of Defense Trade Controls
2401 E Street, N.W.
12th Floor, SA-1
Washington, D.C. 20522

ATTN: Charles B. Shotwell
Director, Office of Defense Trade Controls Policy

RE: Notice of Proposed Rulemaking, RIN 1400-AC96, 76 FR no. 215 (November 7, 2011) Revision of USML Category VIII

Dear Mr. Shotwell:

Northrop Grumman Corporation (Northrop) wishes to thank the Department for the opportunity to submit comments for the above proposed rule. Northrop supports the Department's proposal to describe all items on the U.S. Munitions List (USML) in terms of their unique military capability and technical parameters, and to control only those items that meet or exceed the defined criteria.

Our comments focus on three topics:

1) Definitions of terms
2) Category VIII other than Unmanned Aerial Vehicles (UAV)
3) A positive list for unmanned aerial vehicles controlled on the USML.

We believe a more thorough review of the effects of the proposed USML changes to Category VIII would have been possible if proposed revisions of Category XII (inertial navigation systems and parts) and Category XI (radar and parts) had been published concurrently with the Category VIII proposal, because major aircraft sub-systems are covered by those categories. Also, it is difficult to determine whether the USML and CCL together control all of the items needed to meet Wassenaar Arrangement commitments as contained in Wassenaar Munitions List Category 10.

1. Definitions

a. Clarify the Definition of "End Items" and "Major Components"

The definition of terms in the International Traffic in Arms Regulations ("ITAR") §121.8, should to be revised to distinguish whether items designed to be integrated into a platform requiring "only a

power source to place it in an operating state" are considered "end items" or "major components". The regulation also should include additional definitions as currently used in industry – such as "platform", "system" and "sub-system" to illustrate clearly the treatment of items in the ITAR.

b. Harmonize Key Definitions Between ITAR and EAR

State and Commerce departments should coordinate to assure that these terms and other key terms necessary for proper regulatory interpretation should be the same in both sets of regulations. Currently the Commerce Department proposed rule (RIN 0694-AF36,(76 FR 68675, November 7, 2011) includes a definition of "build-to-print" that is different than the existing definition of "build-to-print" in the ITAR §124.13. Inconsistent definitions between the two export control regulations pose a compliance risk.

2. Category VIII - General

a. Eliminate Specific List of Aircraft listed in Cat VIII

The list of the specific aircraft types should be removed for two reasons: The Category VIII aircraft identification is not complete, and the technical and performance criteria of a positive list should determine the level of control, not the name/model of the aircraft. An incomplete list could be misinterpreted by exporters to mean that only those aircraft listed would be subject to ITAR control.

b. Clarify Language to Control Parts and Components with Low Observable Attributes

In the "Revision of Category VIII" introductory comment section, the Department indicated that parts and components "specially designed" for specific U.S.-origin aircraft that have low observable features or characteristics will remain on the USML in proposed Category VIII (h)(1). It is unclear from the proposed language whether the intent is to control all specially designed parts and components for the named aircraft regardless of the low observable features or characteristics of the specific part or component, or whether the intent is to control ONLY those parts and components for the named aircraft that do have low observable features or characteristics. The language should be clarified to exert USML control in proposed Category VIII (h)(1) only for those specific parts and components that meet the low observable criteria and eliminate the reference to the name and models of aircraft. We suggest the language be modified as follows:

Stealth – 121.1(h) Components, parts, assemblies, attachments, and associated equipment directly related to commodities controlled by §121.1(a), as follows:

(1) Components, parts, assemblies, and attachments "specially designed" to reduce observability detection of aircraft enumerated in (a)(1) thru (a)(12) of this section (including developmental aircraft and/or United States Government technology demonstrators) using features or methods not in the public domain (§120.11). Items that reduce observability detection of the aircraft only through plan form alignment, unless listed below, are subject to the jurisdiction of the Export Administration Regulations. Observability reduction (aka signature reduction) includes any part of the spectrum (e.g., radio frequency, infrared, electro-optical, visual, ultraviolet, acoustic and magnetic);

c. Resolve Potential Duplicative Control of Launch and Recovery Equipment Between USML Categories and Commerce Control List (CCL)

Category VIII (d) *Launching and recovery equipment "specially designed" for defense articles described in paragraph (a) of this category* appears to be in conflict with the draft ECCN 9A610(l) *Apparatus and devices designed or modified for the handling, control, activation or launching of UAV's or drones controlled by either USML paragraph VIII (a) or ECCN 9A610.a. and capable to a range equal to or greater than 300 km.* Launch equipment has historically been identified in Category IV of the ITAR. Therefore, we recommend a review of that Category IV to assure there is no duplicative coverage of the same items within the USML or on both the USML and CCL.

d. Keep Radar Altimeters Under Category XI

We appreciate the attempt to consolidate similar articles under one USML Category. However, we believe radar altimeters identified in the proposed rule in VIII (h)(10) are controlled specifically in Category XI and should remain in the military electronics category pertinent to radar.

3. Recommended Revisions to Category VIII for Unmanned Aerial Vehicles

In response to the Department's statements in the "Request for Comments" introductory section of the proposed rule, with regard to the lack of objective parameters for military unmanned aerial vehicles (UAVs), Northrop offers below revised versions of the proposed rules, Category VIII, sub-paragraphs (a)(5) and (a)(6), including military UAVs that would not be considered Significant Military Equipment ("SME").. We further recommend that UAV Ground Control Stations specially designed for a military UAV that have the capability to process data collected by military electronics on the UAV, be specifically identified within Category VIII, and have proposed additional entries to cover the ground control stations.

We recommend that any UAV specially designed for a military application that does **not** include any specially designed capability controlled on the USML should be transferred to control of the Commerce Department, either by adding additional control language to 9A610 or to the existing ECCN 9A012.

a. Modify Proposed §121.1 Category (a)(5) to read as follows:
***(a)(5) Unarmed unmanned aerial vehicles having any of the following characteristics:**

1. Any military electronics designated as Significant Military Equipment (SME) elsewhere on the USML
2. Any U.S. Government classified capability
3. GPS with PPS and SAASM

b. Modify proposed §121.1 Category (a)(6) as follows:
*(a)(6) Armed unmanned aerial vehicles, including those specially designed to carry weapons, whether such weapons are installed on the vehicle.

c. Modify proposed §121.1 to add a new sub-paragraph (a)(13) as follows:

(a)(13) Any unmanned aerial vehicle specially designed for a military application that does not met the criteria of (a)(5) but includes military electronics controlled on the USML that are not designated as SME.

d. Insert into proposed §121.1 Category VIII a new sub-paragraph for Ground Control Stations for Unmanned Aerial vehicles, using sub-paragraph (e), now reserved, or create a new sub-paragraph, as follows:

*1. Specially designed articles for control of military UAV's which contain capability to process data collected by military electronics designated as SME shall be designated as SME.

2. Specially designed articles for control of military UAV's which contains capability to process data collected by military electronics controlled elsewhere on the USML that is not designated as SME.

e. Add an explanatory note for Optionally Piloted Vehicles in 121.3 (c):

1. OPV's without the avionics and software installed that allows the aircraft to be flown unmanned should be considered manned aircraft for evaluation under the ITAR in Category VIII.
2. OPV's including the unmanned avionics and software, operated as a UAV or optionally piloted aircraft, should be evaluated as a UAV using the criteria proposed for UAV's in Category VIII.

Northrop technical representatives would be pleased to discuss these comments further. Please contact Beth Mersch, (703)280-4056, beth.mersch@ngc.com , to arrange engagement of the appropriate individuals.

Northrop looks forward to further engagement with the U.S. Government at a policy level to further discuss the treatment of unmanned aerial vehicles within the Missile Technology Control Regime. Northrop continues to support substantial review of the treatment of unmanned aerial vehicles within the Missile Technology Control Regime to address their changing military and civilian roles.

Best Regards,

Mary Elizabeth (Beth) Mersch

Mary Elizabeth (Beth) Mersch
Director, Export Operations

BEFORE THE

Department of State

Washington, DC

In the Matter of Proposed Rule Amendment to the International Traffic in Arms Regulations: Revisions of U.S. Munitions List Category VIII	RIN 1400-AC96

To: Directorate, Defense Trade Controls, Department of State

COMMENTS OF THE EADS EXPORT COMPLIANCE COUNCIL

Introduction

1. The EADS Export Compliance Council ("EADS ECC") of the European Aeronautics Defence and Space, NV ("EADS"), hereby comments on the above captioned Proposed Rulemaking in which the Directorate, Defense Trade Controls ("DDTC"), U.S. Department of State ("DoS") seeks comments on the proposed changes to the U.S. Military List ("USML") Category VIII and the proposed revision of ITAR § 121.3.

2. The EADS ECC is composed of the EADS Group Export Compliance Office, the National Export Compliance Officers for France, Germany, Spain, the United Kingdom,

and the United States, and the Business Unit Export Compliance Officers for Airbus (including Airbus Military), Astrium, Cassidian, Eurocopter and EADS North America.

3. The EADS ECC is responsible for establishing and coordinating the export compliance policies of the EADS Group. Each of the ECC members have day-to-day export compliance responsibilities in the principle EADS nations and business units, including non-US EADS businesses that are end-users of defense articles subject to the ITAR and EADS North America business units that are manufacturers or exporters of defense articles subject to the ITAR. The members of the ECC and the companies they represent therefore are interested parties in the above captioned proceeding.

General Comments

4. We heartily endorse the intentions of the proposed rulemaking. In particular, the proposed amendments to Category VIII are long overdue and very welcome. The proposed revision to narrow the types of aircraft and related items controlled on the USML to only those that warrant control under the stringent requirements of the Arms Export Control Act is a huge positive step toward establishing the jurisdictional bright line needed by industry and government.

5. Although "many" of the aircraft controlled in the proposed Category VIII are defined based on objective parameters, as DDTC notes, some are not. The establishment of the objective parameters proposed would be a very large accomplishment and we encourage DDTC to remain steadfast in using objective parameters whenever possible.

6. The comments that follow are focused on details of the language and are in no way a criticism of the intent or spirit of the proposed rules. These comments are offered as suggestions on how to further improve an excellent proposal and to establish objective parameters in areas where the proposed rule falls short of that goal. In particular, these comments focus on our suggestions for establishing a truly positive list using objective standards that distinguish between military aircraft and non-military aircraft.

What distinguishes a "military aircraft" from other aircraft?

7. The proposed changes to VIII(a) do not answer the essential question of what are the characteristics that distinguish a military aircraft from a non-military aircraft. We believe the answer to this question is that there are two fundamental characteristics that distinguish a military aircraft that should be listed on the USML from other aircraft that should not be listed on the USML: (1) military aircraft are aircraft designed or modified to perform distinctly military missions, or (2) military aircraft are aircraft designed or modified to successfully perform any type of mission in a non-permissive environment (*i.e.*, are intended to go in harm's way and survive).

Objective Descriptions of Aircraft that Perform Distinctly Military Missions

8. We believe that there are three ways to positively describe aircraft that are designed or modified to successfully perform distinctly military missions: (1) aircraft in the inventory of the U.S. Department of Defense ("DoD") that are designated by DoD to perform distinctly military missions; (2) aircraft in the inventory of a foreign military organization that are designated by such foreign military organization to perform distinctly military missions; and (3) aircraft that are "specially designed" or modified to incorporate clearly defined military mission equipment.

Aircraft Designated by DoD

9. The first and simplest way to positively describe aircraft that are designed or modified to successfully perform distinctly military missions is to utilize the Mission Design Series ("MDS") designations of the U.S. Department of Defense ("DoD") for aircraft in the inventories of DoD and the Coast Guard. The proposed rule lists the designators used by DoD for identifying aircraft that perform distinctly military missions in section 121.3(a)(1); *i.e.,* A, B, E, F, K, M, P, R or S.

10. However, we believe the use of these DoD designations is misplaced in section 121.3(a)(1). We suggest that the designations should be utilized in paragraph (a)(1) of Category VIII to define one distinct set of military aircraft as follows:

> (a) Aircraft (see § 121.3 of this subchapter) as follows:
>
> > (1) Aircraft that have been entered or are entered into the U.S. Department of Defense ("DoD") or Coast Guard inventories and that are given one or more of the following standard DoD Mission Design Series ("MDS") designators pursuant to DoD Directive 4120.14-L (May 12, 2004) (as amended) for either Basic Missions or Modified Missions:
> >
> > (1) "A" – Attack aircraft
> > (2) "B" – Bomber aircraft
> > (3) "E" – Special Electronic Installation
> > (4) "F" – Fighter
> > (5) "K" – Tanker
> > (6) "M" – Multi-Mission
> > (7) "P" – Patrol
> > (8) "R" – Reconnaissance
> > (9) "S" – Anti-Submarine

Modifying Category VIII paragraph (a)(1) as proposed above creates a positive and clear list of aircraft that are recognized by DoD as performing distinctly military missions and that warrant stringent control under the provisions of the Arms Export Control Act.

Aircraft Designated by a Foreign Military Organization

11. Some ministries of defense or military organizations of foreign countries also utilize military designations for aircraft in their inventories similar to the designations used by DoD. When any airplane in the inventory of a ministry of defense or military organization of a foreign country is designated as performing a mission similar to those designated by DoD, it seems logical that such aircraft also should be listed as military aircraft. Consequently, we propose that the language contained in paragraph 121.3(a)(2) be modified and moved to Category VIII(a)(2) as follows:

> (2) Aircraft that have been entered or are entered into the inventory of any foreign ministry of defense or any branch of a foreign military and that are designated by such ministry of defense or branch of a foreign military for performing a military mission equivalent to the mission designations specified in paragraph (a) of this category.

Modifying Category VIII(a)(2) as proposed above creates a positive and clear list of aircraft that are recognized by foreign military organizations as performing distinctly military missions and that also warrant stringent control under the provisions of the Arms Export Control Act.

Other Aircraft Designed or Modified to Perform Distinctly Military Missions

12. Of course not all aircraft that warrant stringent control under the provisions of the Arms Export Control Act are so designated by the DoD or a foreign military organization. Consequently, it appears to be necessary to list in Category VIII(a)(3) aircraft not described in our proposed subparagraph (a)(1) or (a)(2) that we believe warrant stringent control because they incorporate equipment specially designed for clearly defined military missions. Our proposal is to incorporate a new subparagraph (a)(3) and subparagraph (a)(4) in Category VIII as follows:

(3) Aircraft that incorporate equipment "specially designed" to perform any of the following military missions, unless such equipment is controlled by an ECCN:

(i) target, attack, damage or destroy enemy targets wherever located (*e.g.*, on or under ground, on or under sea, in the air, or in outer space) utilizing conventional or special weapons;

(ii) avoid, counter or defeat enemy detection, targeting or weapons systems using electronic or other countermeasures;

(iii) detect military threats or military attacks using radar systems (*e.g.*, early warning radar);

(iv) command and control military forces or command and control any equipment listed on the U.S. Military List;

(v) tactical data communications links "specially designed" for non-autonomous modes of flight of aircraft otherwise controlled by paragraph (a) of this Article;

(vi) dispense fuel air-to-air, receive fuel air-to-air or receive fuel while hovering-in-flight;

(vii) locating, identifying or assessing foreign military threats or capabilities, including locating or identifying enemy forces or military equipment;

(viii) electronically intercepting, interfering with or preventing foreign military signals and communications and relay of any such intercepted signals and communications;

(ix) testing, measuring or evaluating the lethality or effectiveness of conventional or special weapons (or their operators) that can be used for damaging or destroying aircraft;

(x) training of operators of any aircraft otherwise listed in paragraph (a)(b) or (c) of this Category or training of operators of any of the equipment otherwise listed in paragraph (c) of this Category;

(4) Aircraft equipped with any equipment listed in any other Category of the USML.

Aircraft that are Certified by a Civil Aviation Authority

13. One of the issues that industry has had to deal with that is not addressed in the proposed rule is the effect, if any, of certification for airworthiness by a civil aviation authority on the classification of an aircraft. As we have pointed out to DDTC in the past, the government of Spain regards any aircraft certified by a civil aviation authority to be a "dual use" and not a "military" aircraft.

14. We propose that DDTC adopt a similar approach and add a note to Category VIII that states that aircraft that are certified for airworthiness by a civil aviation authority are not subject to the stringent controls of the ITAR under Category VIII unless the aircraft otherwise is controlled by virtue of our proposed paragraphs (a)(3) or (a)(4) (which are explained below). We also are proposing similar clarifying language for Category VIII(h).

15. We would like to note that our proposed changes to paragraphs (a)(1) through (a)(4) of Category VIII cover the aircraft descriptions in DDTC's proposed paragraph (a), with few exceptions. We examine each below.

(1) Bombers – listed in our proposed Category VIII, but in positive, much clearer fashion;

(2) Fighters, fighter bombers, and fixed-wing aircraft – listed in our proposed Category VIII, but in positive, much clearer fashion;

(3) Jet powered trainers used to train pilots for fighter, attack, or bomber aircraft – the DDTC proposed language does not clearly distinguish a military jet aircraft from other non-military jet aircraft. Any jet aircraft, without further description, could be used for this purpose. We assert that our proposed Category VIII, paragraph (a)(3)(10), is a positive description of the equipment incorporated in military training aircraft that warrant stringent controls.

(4) Attack helicopters - listed in our proposed Category VIII, paragraphs (a)(1) through (a)(4), but in a positive, much clearer fashion;

(5) Unarmed military unmanned aerial vehicles (UAVs) – as noted by DDTC, the DDTC proposed language does describe a military UAV using objective criteria. Our proposed Category VIII(a)(1) through (a)(4) distinguish between military UAVs and UAVs that are not military in the following positive ways: (1) military UAVs in the inventory of DoD will have one or more of the primary or secondary mission designators indicated in paragraph (a); (2) if military UAVs in the inventory of foreign military organizations have one or more designators indicated in paragraph (b) then they also will be clearly identified to be covered by paragraph (b), and; (3) all other military UAVs warranting stringent control will be captured by virtue of their incorporation of equipment listed in paragraphs (a)(3) or (a)(4).

(6) Armed unmanned aerial vehicles – comprehensively covered in our proposed Category VIII(a)(1) through (a)(4) in a positive fashion.

(7) Military intelligence, surveillance, and reconnaissance aircraft – the proposed language does not distinguish between military aircraft that warrant stringent control and non-military aircraft that may be used for intelligence, surveillance or reconnaissance. We assert that our proposed Category VIII(a)(3)(vii) and (a)(3)(viii), is a positive description of the military intelligence, surveillance or reconnaissance equipment that warrant stringent controls under the Arms Export Control Act of an aircraft incorporating such equipment.

(8) Electronic warfare, airborne warning and control aircraft – the DDTC proposed language does not adequately describe the distinguishing features of such aircraft. We assert that our proposed language in Category VIII, paragraph (c)(8) - for electronic warfare, paragraph (a)(3)(iii), (a)(3)(iv) and (a)(3)(viii) – for airborne warning, and paragraph (a)(3)(iv) and (a)(3)(v) – for control aircraft are better positive descriptions that distinguish military aircraft that warrant stringent controls under the Arms Export Control Act.

(9) Air refueling aircraft and "Strategic" airlift aircraft – we assume that DDTC intends to cover air-to-air refueling aircraft. We note that Category VIII(a)(12) of DDTC's proposed rule also covers aircraft capable of being refueled in flight, including hover-in-flight refueling. Both kinds of refueling are covered in our proposed Category VIII(a)(3)(vii) in a positive fashion. "Strategic" airlift aircraft also are covered by DDTC's proposed subparagraph (9). However, the term "Strategic" while capitalized in the proposal is not defined in Category VIII. However, DDTC's proposed section 121.3 contains the following language: "(4) are strategic airlift aircraft capable of airlifting payloads over 35,000 lbs to ranges over 2,000 nm without being refueled in-flight into short or unimproved airfields." It should be noted that modern commercial aircraft are capable of carrying payloads greatly in excess of 35,000 lbs to ranges in excess of 2,000 nm. For example, an Airbus A330-200F, which is considered to be a mid-range aircraft, can carry 64 tons over a range of 4,000 nm non-stop without refueling in-flight.

The qualification of "into short or unimproved airfields" could be an important qualifier but the meaning of the terms "short" and "unimproved" airfields are not adequately defined for use in Category VIII. The length of a runway that can be used safely varies from aircraft to aircraft and depends on a number of factors including altitude of the runway and air temperature at the time of take-off or landing (which usually require different runway lengths). We question whether language in DDTC's proposed section 121.3(4) really distinguishes military cargo transport aircraft that warrant stringent controls from commercial cargo transport aircraft that do not warrant such stringent controls. We assert that it is not the cargo capacity, the range, or the type of airfield from which it can operate that distinguishes a military cargo aircraft from civil cargo aircraft. We assert that what distinguishes a military cargo aircraft from a civil cargo aircraft is the incorporation of the mission equipment listed in our proposed Category VIII(a)(3) and (a)(4) or the design features intended for operations in non-permissive environments (discussed later in these comments).

(10) Target drones – the term "target drones" is just another way of describing unmanned aerial vehicles used as targets for testing military weapons systems or for training military personnel. DDTC's proposed language fails to describe the characteristics that distinguish a military "target drone" from other drones. We believe our proposed Category VIII(a)(3)(ix) does describe those characteristics of a target aircraft (whether drone or otherwise) that should be subject to stringent controls of the Arms Export Control Act.

(11) Aircraft equipped with any mission systems controlled under this subchapter – effectively covered in our proposed Category VIII(a)(4).

(12) Aircraft capable of being refueled in flight including hover-in-flight refueling (HIFR) – described in a positive fashion in our proposed Category VIII(a)(3)(vii).

Aircraft "specially designed" to Operate in Non-Permissive Environments

16. Another way to distinguish military aircraft that warrant stringent controls from aircraft that do not warrant such stringent controls is to recognize those design or modification features that are intended to allow the aircraft to successfully perform operations in non-permissive or hostile environments.

17. What are the attributes that an aircraft should have to operate in a non-permissive environment? We believe that the attributes are as follows:

- The aircraft must be difficult to detect by hostile or enemy forces;
- The aircraft must be difficult to hit by known conventional or special weapons; and
- The aircraft must be capable of achieving a certain level of survivability from hits by known conventional or special weapons.

18. These attributes can be achieved either by incorporating mission systems "specially designed" for these purposes into an aircraft or by specifically designing or modifying the structure (materials or geometry) of an aircraft for these purposes.

19. How can these attributes be described in a positive fashion for purposes of listing aircraft that should be subject to the stringent controls of the Arms Export Control Act? We believe that these attributes can be described in a positive fashion by adding a new subparagraph (5) and subparagraph (6) to Category VIII, paragraph (a) as follows:

> (5) Aircraft that are "specially designed" or modified to -
>
> (i) substantially reduce the detectability of an aircraft by a military warning system or by a targeting system for conventional or special weapons, including substantial

reduction of visual, acoustical or electromagnetic signatures of an aircraft;

(ii) evade, prevent or divert an attack by a known enemy conventional or special weapons system;

(iii) protect the crew or a flight critical component of an aircraft from impact by a 12.7 mm or larger projectile.

(6) Aircraft equipped with equipment not otherwise controlled in this subchapter if such equipment are "specially designed" for a purpose specified in subparagraph (a)(5) of this Category VIII.

Aircraft Components, Parts, Accessories, Attachments, and Associated Equipment

20. We believe that paragraphs (h)(1) through (h)(19) of DDTC's proposed rule require substantial rework to achieve DDTC's stated objectives. Many of the paragraphs incorrectly specify commercial state of the art as military technology thresholds or incorrectly specify commercial technologies or equipment as having a distinct military purpose. The fact that an item with a particular performance specification is used on a military aircraft does not mean that the item itself has a distinct military purpose that warrants control. Furthermore, items should not be listed in Category VIII(h) if they are more appropriate for control under another Category of the USML. For example:

- Gearboxes with internal pitch line velocities exceeding 15,000 feet per minute are commercial state of the art, have no military significance or special military purpose or function and should not be used as a descriptor of military equipment that warrant stringent controls. All of the types of gearboxes listed in proposed (h)(2) are anticipated to come into commercial service. In general, gearboxes should not be controlled unless they have special features such as use of coatings to achieve substantial reduction of radar detection.

- Folding wing systems are not uncommon in light sport utility aircraft, have no military significance or special military purpose and should not be used as a descriptor of military equipment that warrant stringent controls.
- Tail boom systems are utilized in virtually all commercial helicopters, have no military significance or special military purpose and should not be used as a descriptor of military equipment that warrant stringent controls;
- Stabilators are used in commercial aircraft, have no military significance or special military purpose and should not be used as a descriptor of military equipment that warrant stringent controls;
- External stores support systems are commercially available and have no unique military function and should not be used as a descriptor of military equipment that warrant stringent controls;
- All back-up systems within the engine FADEC and AFCS/SAS may be considered as "damage/failure-adaptive flight control systems". They are already part of the civil type certification. There is no technical parameter to delimit between military and civil purpose. Such systems are not unique to military systems or have a unique military function and should not be used as a descriptor of military equipment that warrant stringent controls;
- EADS CASA has a patent for a thrust vectoring system intended for civil and commercial use and thrust vectoring should not be used as a descriptor of military equipment that warrant stringent controls;
- There is nothing militarily significant about the use of lithium-ion batteries providing 28 VDC or 270 VDC as the technology is exactly the same for all voltages. Lithium-ion batteries are certified for use in civil helicopters and there is no delimitation between civil and military use. Lithium-ion batteries with 28VDC or 270 VDC should not be used as a descriptor of military equipment subject to controls under Category VIII;
- Commercial aircraft also use mission computers, vehicle management computers and integrated core processors and the utilization or incorporation of such equipment in aircraft has no unique military function or purpose. Mission

computers, vehicle management systems and integrated core processors should not be used as descriptors of military equipment subject to controls under Category VIII.

21. We assert that paragraph (h) should be rewritten by substituting the following language:

(h) Aircraft components, parts, accessories, attachments, and associated equipment as follows:

(1) Components, parts, accessories, attachment and equipment "specially designed" for the purposes specified in paragraph (a)(5) of this Category;

(2) Automatic rotor blade folding systems and parts and components "specially designed" therefor;

(3) Tail hooks and arresting gear "specially designed" for aircraft listed in paragraph (a) of this category and parts and components "specially designed" therefor;

(4) Bomb racks, missile launchers, missile rails, weapon pylons, pylon-to-launcher adapters, UAV launching systems and external military stores support systems and parts and components "specially designed" therefor;

(4) Military threat adaptive autonomous flight control systems;

(5) Radar altimeters with output power management or signal modulation (i.e., frequency hopping, chirping, direct sequence-spectrum spreading) LPI (low probability of intercept) capabilities;

(6) UAV flight control systems and vehicle management systems "specially designed" for swarming, i.e., ability to interact with each other to avoid collisions and stay together, or, if weaponized, to coordinate targeting;

(7) Helmet Mounted Cueing Systems, Joint Helmet Mounted Cueing Systems (JHMCS), Helmet Mounted Displays, Display and Sight Helmets (DASH) and variants thereof;

(8) Fire control computers, military mission computers, armaments control processors, aircraft-weapon interface units and computers "specially designed" for aircraft listed in paragraph (a) of this category;

(9) Radomes "specially designed" for operation in multiple or nonadjacent radar bands or designed to withstand a combined thermal shock greater than 4.184×10^6 J/m^2 accompanied by a peak overpressure of greater than 50 kPa;

(10) Any component, part, accessory, attachment, equipment or system that:

(i) is classified;

(ii) contains classified software;

(iii) is manufactured using classified production data; or

(iv) is being developed using classified information.

22. We also proposed that the following language be added at the end of Category VIII(h) to make it clear that parts and components of aircraft that are certified for airworthiness by a civil aviation authority are not controlled under Category VIII unless they are "specially designed" or modified as specified in (h1) through (h)(10).

Parts and components for aircraft that are certified for airworthiness by a civil aviation authority are not controlled under Category VIII (h) unless such parts or components have been "specially designed" or modified as specified in (h)(1) through (h)(10) of this Category.

§ 121.3 Aircraft and Related Articles

23. We suggest that paragraph (a) of § 121.3 be rewritten by incorporating the substance of § 121.3(a) in Category VIII(a) (as has been described above) and providing instead a definition of "aircraft" that does not use the term to define itself (which is an error of logic).

24. All that is required to be included in § 121.3(a) is the ordinary definition of aircraft as follows:

> **§ 121.3 Aircraft and related articles.**
>
> (a) In Category VIII "aircraft" means any machine that can travel through the air, including machines that are heavier than air or lighter than air, machines that are manned or unmanned, and machines that are powered or unpowered. The term "aircraft" includes, but is not limited to, jet powered airplanes, propeller airplanes, helicopters, lighter than air vehicles (such as balloons and dirigibles), gliders, UAVs, and spaceplanes.

25. § 121.3(b) also requires some editing to correct a drafting error and, we suggest, to conform it to the language we have proposed above. We also suggest that the paragraph be divided into two paragraphs to clearly separate the two subjects that are rather awkwardly combined in DDTCs proposed rule.

> (b) Aircraft that are not listed in Category VIII(a) but have military applications are subject to the EAR under an ECCN to be determined.
>
> (c) Any aircraft listed in Category VIII(a) that was manufactured prior to 1956, that is unarmed, and that is unmodified since manufacture except for removal of weapons, is subject to the EAR under an ECCN to be determined. Modifications made to incorporate safety of flight features required for airworthiness certification by the FAA, EASA or another foreign government organization responsible for flight safety certification, such as transponders, air data recorders and civil radios, are considered "unmodified" for the purposes of this subparagraph.

Conclusion

26. We respectfully urge the consideration of the comments and suggestions to the proposed rules as set forth above. A complete version of our proposed changes is attached as Attachment A.

Respectfully submitted on behalf of the EADS Export Compliance Council (Christophe Assemat, Dennis Burnett, Pierre Cardin, Dominique Guillaume, Jochen Hartmannshenn, Arnaud Idiart, Peter Klein, David de Teran, and Doris Wirth)

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December 22, 2011

Attachment A

§ 121.3 Aircraft and related articles.

(a) Aircraft (see § 121.3 of this subchapter) as follows:

(1) Aircraft that have been entered or are entered into the U.S. Department of Defense ("DoD") or Coast Guard inventories and that are given one or more of the following standard DoD Mission Design Series ("MDS") designators pursuant to DoD Directive 4120.14-L (May 12, 2004) (as amended) for either Basic Missions or Modified Missions:

(i) "A" – Attack aircraft
(ii) "B" – Bomber aircraft
(iii) "E" – Special Electronic Installation
(iv) "F" – Fighter
(v) "K" – Tanker
(vi) "M" – Multi-Mission
(vii) "P" – Patrol
(viii) "R" – Reconnaissance
(ix) "S" – Anti-Submarine

(2) Aircraft that have been entered or are entered into the inventory of any foreign ministry of defense or any branch of a foreign military and that are designated by such ministry of defense or branch of a foreign military for performing a military mission equivalent to the mission designations specified in paragraph (a) of this category.

(3) Aircraft that incorporate equipment "specially designed" to perform any of the following military missions, unless such equipment is specifically controlled by an ECCN:

(i) target, attack, damage or destroy enemy targets wherever located (*e.g.*, on or under ground, on or under sea, in the air, or in outer space) utilizing conventional or special weapons;

(ii) avoid, counter or defeat enemy detection, targeting or weapons systems using electronic or other countermeasures;

(iii) detect military threats or military attacks using radar systems (*e.g.*, early warning radar);

(iv) command and control military forces or command and control any equipment listed on the U.S. Military List;

(v) tactical data communications links "specially designed" for non-autonomous modes of flight of aircraft otherwise controlled by paragraph (a) of this Article;

(vi) dispense fuel from an aircraft in flight to an aircraft in flight, receive fuel by an aircraft in flight from an aircraft in flight, receive fuel by an aircraft while hovering-in-flight from a dispenser on the ground, from a dispenser on-board a vessel or from another aircraft hovering-in-flight;

(vii) locating, identifying or assessing foreign military threats or capabilities, including locating or identifying enemy forces or military equipment;

(viii) electronically intercepting, interfering with or preventing foreign military signals and communications and relay of any such intercepted signals and communications;

(ix) testing, measuring or evaluating the lethality or effectiveness of conventional or special weapons (or their operators) that can be used for damaging or destroying aircraft;

(x) training of operators of any aircraft otherwise listed in paragraph (a)(1), (a)(2) or (a)(3) of this Category or training of operators of any of the equipment otherwise listed in paragraph (c) of this Category;

(4) Aircraft equipped with any equipment listed in any other Category of the USML.

(5) Aircraft that are "specially designed" or modified to -

(i) substantially reduce the detectability of an aircraft by a military warning system or by a targeting system for conventional or special weapons, including substantial reduction of visual, acoustical or electromagnetic signatures of an aircraft;

(ii) evade, prevent or divert an attack by a known enemy conventional or special weapons system;

(iii) protect the crew or a flight critical component of an aircraft from impact by a 12.7 mm or larger projectile.

Aircraft that are certified for airworthiness by a civil aviation authority are presumed not controlled under Category VIII unless such aircraft have been designed or modified as specified in (a)(3), (a(4) or (a)(5) of this Category.

(6) Aircraft equipped with equipment not otherwise controlled in this subchapter if such equipment are "specially designed" for a purpose specified in subparagraph (a)(5) of this Category VIII.

(b) [Reserved – for items formerly controlled under this subcategory see Category XIX and an ECCN to be determined]

(c) [Reserved]

(d) Launching and recovery equipment "specifically designed" for defense articles described in paragraph (a) of this category.

(e) [Reserved]

(f) Developmental aircraft and "specifically designed" parts, components, accessories, and attachments therefor developed under a contract with the U.S. Department of Defense.

(g) [Reserved]

(h) Aircraft components, parts, accessories, attachments, and associated equipment as follows:

(1) Components, parts, accessories, attachment and equipment "specially designed" for the purposes specified in paragraph (a)(5) of this Category;

(2) Automatic rotor blade folding systems and parts and components "specially designed" therefor;

(3) Tail hooks and arresting gear "specially designed" for aircraft specified in paragraph (a) of this category and parts and components "specially designed" therefor;

(4) Bomb racks, missile launchers, missile rails, weapon pylons, pylon-to-launcher adapters, UAV launching systems and external military stores support systems and parts and components "specially designed" therefor;

(4) Threat adaptive autonomous flight control systems;

(5) Radar altimeters with output power management or signal modulation (i.e., frequency hopping, chirping, direct sequence-spectrum spreading) LPI (low probability of intercept) capabilities;

(6) UAV flight control systems and vehicle management systems "specially designed" for swarming, i.e., ability to interact with each other to avoid collisions and stay together, or, if weaponized, to coordinate targeting;

(7) Helmet Mounted Cueing Systems, Joint Helmet Mounted Cueing Systems (JHMCS), Helmet Mounted Displays, Display and Sight Helmets (DASH) and variants thereof;

(8) Fire control computers, military mission computers, armaments control processors, aircraft-weapon interface units and computers "specially designed" for aircraft listed in paragraph (a) of this Category;

(9) Radomes "specially designed" for operation in multiple or nonadjacent radar bands or designed to withstand a combined thermal shock greater than 4.184 x 10^6 J/m^2 accompanied by a peak overpressure of greater than 50 kPa;

(10) Any component, part, accessory, attachment, equipment or system that:

(i) is classified;

(ii) contains classified software;

(iii) is manufactured using classified production data; or

(iv) is being developed using classified information.

"Classified" in this subcategory means classified pursuant to Executive Order 13256, or predecessor order, and a security classification guide developed pursuant thereto or equivalent, or to the corresponding classification rules of another government.

Parts and components for aircraft that are certified for airworthiness by a civil aviation authority are not controlled under Category VIII (h) unless such parts or components have been "specially designed" or modified as specified in (h)(1) through (h)(10) of this Category.

(i) Technical data (as defined in § 120.10 of this subchapter) directly related to the defense articles enumerated in paragraphs (a) through (h) of this category. (See § 125.4 of this subchapter for exemptions).

§ 121.3 Aircraft and related articles.

(a) In Category VIII "aircraft" means any machine that can travel through the air, including machines that are heavier than air or lighter than air, machines that are manned or unmanned,

and machines that are powered or unpowered. The term "aircraft" includes, but is not limited to, jet powered airplanes, propeller airplanes, helicopters, lighter than air vehicles (such as balloons and dirigibles), gliders, UAVs, and spaceplanes.

(b) Aircraft that are not listed in Category VIII(a) but have military applications are subject to the EAR under an ECCN to be determined.

(c) Any aircraft listed in Category VIII(a) that was manufactured prior to 1956, that is unarmed, and that is unmodified since manufacture except for removal of weapons, is subject to the EAR under an ECCN to be determined. Modifications made to incorporate safety of flight features required for airworthiness certification by the FAA, EASA or another foreign government organization responsible for flight safety certification, such as transponders, air data recorders and civil radios, are considered "unmodified" for the purposes of this subparagraph.

AMERICAN ASSOCIATION OF EXPORTERS AND IMPORTERS

The Voice of the International Trade Community Since 1921

December 22, 2011

Via E-Mail (DDTCResponseTeam@state.gov)

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
U.S. Department of State
PM/DDTC, SA–1, 12th Floor
Washington, DC 20522–0112.

ATTN: Category VIII Revision,
Bureau of Political Military Affairs

Re: Comments on Proposed ITAR Amendments: Revision of USML Category VIII; RIN: 1400-AC96

Dear Sir or Madam:

On behalf of the American Association of Exporters and Importers (AAEI), we respectfully submit these comments concerning the proposed rule on Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VII1 issued by the Department of State and published in the *Federal Register* on November 7, 2011 (75 Fed. Reg. 68,694).

AAEI has been a national voice for the international trade community in the United States since 1921. AAEI represents the entire spectrum of the international trade community across all industry sectors. Our members include manufacturers, importers, exporters, wholesalers, retailers and service providers to the industry, which is comprised of brokers, freight forwarders, trade advisors, insurers, security providers, transportation interests and ports. AAEI promotes fair and open trade policy. We advocate for companies engaged in international trade, supply chain security, export controls, non-tariff barriers, import safety and customs and border protection issues. AAEI is the premier trade organization representing those immediately engaged in and directly impacted by developments pertaining to international trade. We are recognized as the technical experts regarding the day-to-day facilitation of trade.

1. General Comments

AAEI appreciates the opportunity to comments on the proposed USML Category VIII Revisions as part of the Administration's Export Control Reform effort. AAEI strongly supports the President's Export Control Reform initiative. AAEI has participated in consultations with Administration and Congressional staff regarding recommendations for export control reform of the current statutory and regulatory regime.

AAEI strongly supports the goal of creating a "positive list" of controls which is compatible with U.S. national security interests and multilateral export control regimes. AAEI also recommends that U.S. national security controls be risk-based

and streamlined in order to reduce delays in obtaining any required export authorizations.

The proposed revisions to USML Category VIII generally appear to follow this approach by amending USML Category VIII to make it a positive list that would cover only those defense articles that merit control under the stringent requirements of the Arms Export Control Act. In addition, the revisions would be beneficial because they would mostly eliminate the subjective criterion of design-intent when determining if an item is subject to the jurisdiction of the International Traffic in Arms Regulations (ITAR). Those criteria have resulted in unnecessary controls on a wide range of items, including tubing, insulating materials, seals, fasteners and washers that are made to a military contractor's specific size requirements but otherwise have no inherent military significance or utility. Transferring the jurisdiction of those items to the Commerce Control List and the jurisdiction of the Export Administration Regulations should greatly assist U.S. companies that are losing business to foreign competitors when a customer requires "ITAR-free" parts.

2. Specific Comments

A. Applicability of Other USML Categories

Under the proposed rules issued by DDTC and BIS, many current USML Category VIII items will be moved to the new 600 series Commerce Control List and will be subject to the jurisdiction of the EAR. However, it is not clear which agency will have jurisdiction over former USML Category VIII items when another USML category would appear to describe the items. For example, there could be ambiguity over whether military electronics designed for military aircraft, such as guidance or control equipment, would be subject to the EAR or USML Category XI. Having a part removed from USML Category VIII by virtue of the proposed revisions but still subject to Category XI would defeat the purpose of the proposed changes.

B. Unmanned Aerial Vehicles ("UAV")

Industry members report that it would be helpful for DDTC to post a list of military UAV programs subject to DDTC and ITAR jurisdiction. Suppliers for UAV programs have indicated their preference that USML UAV programs be positively identified, since they are generally able to ascertain whether their products are for a particular UAV program.

C. Low Observable Features for Non-End Items

The language in the amended USML Category VIII(h) and the accompanying explanation in the *Federal Register* notice, do not make it entirely clear when parts, components, subassemblies, etc. with low observable features would be subject to the EAR or remain in USML Category VIII.

The use of the term "specially designed" in lieu of the term "specifically designed" in subsection (h) and several other subsections in proposed Category VIII continues to be problematic and does not achieve the intended regulatory clarity of a positive list.

D. Launching and Recovery Equipment

New subsection (d) to Category VIII would cover "specially designed" launching and recovery equipment, but it is not clear what launch-related items DDTC intends to transfer to the EAR. It would be helpful if DDTC could clarify whether it does not intend to control rocket launchers unless they are specially designed for listed aircraft.

3. Conclusion

AAEI and its member companies greatly appreciate all the work and effort being undertaken by the Departments of State, Defense, Commerce and other agencies to achieve the goal of export control reform. AAEI would be pleased to discuss these comments in more detail with DDTC leadership and staff.

Sincerely,

Marianne Rowden
President & CEO

cc: Douglas N. Jacobson, Co-Chair, AAEI Export Compliance & Facilitation Committee
Phillip Poland, Co-Chair, AAEI Export Compliance & Facilitation Committee

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RICHARD W. ZUIDEMA
Executive Vice President

December 22, 2011

VIA ELECTRONIC MAIL (DDTCResponseTeam@state.gov)

Ms. Ellen Tauscher
Under Secretary
Arms Controls and International Security
U.S. Department of State
Washington, DC 20522

Re: Comments on Proposed Rule Amending International Traffic in Arms Regulations ("ITAR), U.S. Munitions List ("USML") Category VIII

Dear Ms. Tauscher,

In response to the Directorate of Defense Trade Controls' ("DDTC's") November 7, 2011 Public Notice of a Proposed Rule amending Category VIII of the USML, EnerSys (PM/DDTC Registration Code [redacted]) hereby provides timely Comments. As discussed further below, EnerSys disagrees with DDTC's proposed amendment, which would specifically list all Lithium-ion aircraft batteries that provide either 28 VDC or 270 VDC on the USML.

EnerSys is a large manufacturer of Lithium-ion batteries, both for civil and military applications. EnerSys manufactures these batteries, including aircraft batteries providing either 28 VDC or 270 VDC, for distribution and sale both domestically and abroad. To date, all of EnerSys' aircraft batteries that are designed for civil aircraft applications have been handled and exported in accordance with Department of Commerce jurisdiction under the Export Administration Regulations. To impose ITAR control on any Lithium-ion aircraft battery that provides either 28 VDC or 270 VDC, regardless of the application for which the product was designed, will harm U.S. Lithium-ion battery manufacturers in the global marketplace and create regulatory burdens not currently faced by those manufacturers.

EnerSys does not believe that Lithium-ion aircraft batteries that provide either 28 VDC or 270 VDC are of a *per se* military nature that would justify the business and regulatory disadvantages associated with those products being newly added to the USML. EnerSys supplies many 28 VDC batteries into non-military applications such as for the Boeing 777, as well as multiple OEM platforms (Dassault, Cessna, Gulfstream, etc). Currently these batteries are lead acid chemistry; however we foresee these batteries transitioning to Lithium-ion in the future. Therefore EnerSys does not believe that there is a policy justification for including all such Lithium-ion aircraft batteries on the USML.

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The current approach, whereby manufactures such as EnerSys recognize that all Lithium-ion aircraft batteries specially designed for military applications are ITAR-controlled, is sufficient to meet the policies underlying ITAR control. Therefore, EnerSys respectfully disagrees with DDTC's proposed inclusion of these aircraft batteries on the USML and requests that you revise that provision in the Final Rule.

Please let me know if you have any questions, or if EnerSys may provide any further information that is helpful.

Sincerely,

Richard W. Zuidema
Executive Vice President

Honeywell
101 Constitution Avenue, N.W.
Suite 500 West
Washington, DC 20001
202-662-2650

December 22, 2011

U.S. Department of State
PM/DDTC
SA-1 12th Floor
Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
Bureau of Political Military Affairs
Washington, DC 20500-0112

Attn: DDTC Response Team

Subject: "ITAR Amendments – Category VIII" (Federal Register Vol. 76, No. 215 dated Monday, November 7, 2011 / RIN1400-AC96

To Whom It May Concern:

Honeywell is generally in favor of the subject proposed rule, believes it creates a strong foundation for establishing a "positive list" of ITAR controlled items and provides clarification that companies can rely upon when complying with U.S. export laws and regulations. The proposed rule could also provide a path forward to periodically review the USML to control only those items that warrant control under requirements of the Arms Export Control Act.

Below are comments for consideration:

- The term "Specially Designed" is ambiguous and requires more clarity. There is a general understanding that the term is also intended to be equally used with a common interpretation on the CCL and USML. Therefore, the following is being recommended for consideration:
    - Provide an illustrative list of examples in each USML and CCL category of the types of products and technologies that would and would not meet the definition of "specially designed."
    - Provide a general description of the types of products and technologies that would and would not meet the definition of "specially designed." By way of illustration the following is provided:
        - Parts and components that make up an aircraft's environmental control systems (ECS) that are selected or similarly designed from a catalog of products with various performance range capabilities would not be considered specially designed if, 1) the technologies associated to the core "heat exchanger" and its surrounding parts have the same

performance characteristics for any commercial or military application, and 2) have no unique properties or materials peculiarly responsible for achieving a specific military requirement or function.

- Suggest revising the language in the header of ITAR Category VIII(h) to read as follows: "(h) Aircraft components, parts, accessories, attachments, and associated equipment *for those items specifically enumerated under VIII(a)* as follows:"

- Consider leaving language in Category VIII referencing the note associated to Section 17(c) of the Export Administration Act of 1979.

If you have any questions or would like to discuss the comments provided above, feel free to contact the undersigned at 202-662-2641 or via e-mail at dale.rill@honeywell.com.

Sincerely,

Dale Rill
Director, Export Control and Compliance
Honeywell International Inc.

United Technologies Corporation
1101 Pennsylvania Avenue, NW
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United Technologies

December 22, 2011

Charles B. Shotwell
Director, Office of Defense Trade Controls Policy
Directorate of Defense Trade Controls
PM/DDTC, SA-1, 12th Floor
Bureau of Political Military Affairs
U.S. Department of State
Washington, D.C. 20522-0112

Attn: ITAR Amendments – Category VIII

Re: Amendment to the International Traffic in Arms Regulations: Revisions to the U.S. Munitions List Category VIII (76 Fed. Reg. 68694, November 7, 2011

Dear Mr. Shotwell:

United Technologies Corporation ("UTC")[1] appreciates the opportunity to submit these comments on the U.S. Department of State's proposed rule to amend the International Traffic in Arms Regulations ("ITAR") to revise U.S. Munitions List ("USML") Category VIII – Aircraft and Related Articles. The proposed rule would revise Category VIII to establish a clearer line between the USML and the Commerce Control List ("CCL") regarding controls over military aircraft and related articles.[2] More specifically, the proposed revision narrows the types of aircraft and related items controlled on the USML to only those that warrant control under the stringent requirements of the Arms Export Control Act and the ITAR.

UTC strongly endorses the Administration's Export Control Reform Initiative, and its stated goal of strengthening national security and the competitiveness of key U.S. manufacturing and technology sectors by focusing on current threats and the changing technological landscape. Of paramount importance in achieving this goal is reforming both the USML and the CCL, and aligning associated export licensing policies, to achieve a more positive, transparent and predictable structure that concentrates munitions and dual-use export controls on the most sensitive items. The reform and alignment of the control lists, and the transfer of militarily less significant items to CCL control, will facilitate UTC's ability to

[1] UTC is a global, diversified corporation based in Hartford, Connecticut, supplying a broad range of high technology products and services to the aerospace, power generation, security, transportation, and building systems industries. UTC's companies are industry leaders, among them Hamilton Sundstrand aerospace and industrial systems; Pratt & Whitney aircraft engines, space propulsion systems and industrial turbines; Sikorsky helicopters; Carrier heating, air conditioning and refrigeration systems; Otis elevators and escalators; UTC Fire & Security electronic security and fire safety systems; and UTC Power fuel cell and power systems.

[2] UTC is submitting comments on the U.S. Department of Commerce's parallel proposed rule to amend the EAR to control aircraft and related items the President determines no longer warrant control under the U.S. Munitions List.

compete more effectively in the international marketplace while maintaining and enhancing U.S. national security and foreign policy objectives.

As the Administration's reform initiative recognizes, the current USML jurisdictional structure is exceedingly broad, imposing controls on countless parts, components, assemblies, attachments and accessories of military products and their associated technologies that have little or no military significance and are indistinguishable from commercial counterparts that are widely available globally. The vast majority of such parts or components are not subject to the USML based on a national security judgment of their military significance, but solely because the items were specifically designed or modified in form or fit for an end-item on the USML. Further, such parts and components generally make insignificant and insubstantial contributions to the indigenous development, production, use, or enhancement of USML end-items. This is especially acute in the area of Category VIII aircraft and aircraft systems, where the over-control of a vast array of parts and components puts enormous pressure on the defense trade licensing and compliance systems, requiring exporters and their global suppliers, partners and customers to manage life-cycle controls under the rigorous requirements of the International Traffic in Arms Regulations ("ITAR"). Managing these requirements demands significant licensing and compliance resources, and hinders the speed, efficiency and effectiveness of international programs with NATO allies and multilateral regime partners. As such, the present system imposes excessive costs on U.S. exporters and recipients of controlled goods and services, constrains competiveness of the U.S. industrial base, and impedes collaboration with U.S. friends and allies with no commensurate benefit from the standpoint of protecting U.S. national security interests.

For UTC companies, the large majority of defense trade licensing activity relates to defense articles and defense services falling under USML Category VIII. UTC's products span a broad spectrum of aerospace products from helicopters and associated equipment, aircraft engines and engine controls, and a wide range of rotor and fixed wing aircraft systems including auxiliary power units, propeller systems, electric power, actuation, air management, fire protection and detection, among others. In calendar year 2011 through mid-December, approximately 85 percent of our nearly 1000 ITAR license applications included items falling under Category VIII. Of that volume, roughly 78 percent involved defense articles – parts, components, accessories, attachments and associated equipment – currently captured in subcategory VIII(h). Given the widespread significance of Category VIII to UTC and the aerospace industry as a whole, we encourage prompt consideration of the public comments and subsequent steps to finalize and implement these reform proposals for aircraft and related articles.

I. USML CATEGORY VIII – AIRCRAFT AND RELATED PARTS

A. Aircraft and "Mission Systems"

UTC supports the proposed transfer of certain military transport, trainer, utility and staff transport aircraft from the USML to the CCL. Transfer of these types aircraft to the CCL is consistent with the Administration's export control reform objectives to create control lists that accurately reflect contemporary national security and foreign policy objectives, to improve the ability of the U.S. Government to monitor and enforce controls on those items of

greatest national security sensitivity, and to reduce jurisdictional confusion for manufacturers and exporters. At the same time, the U.S. government would continue to maintain effective control of exports of such aircraft under the EAR. The aircraft would be covered under new ECCN 9A610.a, "Military Aircraft" "specially designed" for a military use that are not enumerated in USML paragraph VIII(a). An export license from the Department of Commerce would be required and licenses applications would be reviewed by the Department of Defense. License Exception STA would potentially be available for 36 allied countries, but only upon request after review and approval by the Departments Commerce, Defense and State.

Despite the apparent intention to transfer military transport, trainer, utility and staff transport aircraft to the CCL, VIII(a) would control aircraft equipped with any "mission systems" that are controlled on the USML. The definition of "mission systems" in 121.3(a)(6) is expansive, and is based on a standard that the system perform "specific military functions beyond airworthiness, such as providing military communication, radar, active missile countermeasures, target designation, surveillance, or sensor capabilities." If interpreted broadly, the standard would effectively keep all or most military transport, trainer, utility and staff aircraft on the USML, thereby thwarting the very objective of transferring non-militarily significant aircraft to CCL control. Furthermore, civil aircraft, including those operated for non-military purposes, would be subject to the USML if they incorporate any "mission system" (*e.g.*, an ITAR-controlled FLIR installed on a civil helicopter used for non-combat search and rescue).

We suggest amending the definition of "mission systems" to achieve a more balanced result. Specifically, revising the definition to exclude communication, navigation and survivability equipment for transport, trainer, utility and staff aircraft would be consistent with the apparent intent to transfer these types of aircraft to ECCN 9A610(a).

- **USML Communication Equipment.** Military communication receivers/transmitters, which are needed for communication on military frequencies, appear to be captured by the definition of "mission systems." The installation of such equipment on a military transport, trainer, utility or staff aircraft should not cause the aircraft to be placed on the USML because these items are necessary to conduct the transport, training, and utility mission. Radios capable of transmitting on military frequencies are required not only for communication with military ground stations (*e.g.*, air bases), but also for communications with other military aircraft. Communication on military frequencies also may be required during humanitarian missions and for coordination between military and civil authorities. Examples of typical communication equipment for a military utility helicopter include the MXF-4027 and ARC-210 communications radios. "Military communication" is a basic function required for transport, trainer, utility and staff operations, and the presence of the military radio does not alter the mission or function of the transport, trainer or utility aircraft. Reflecting the above rationale, the proposed definition of "mission systems" should be revised to specifically exclude "military VHF, UHF, AM, FM, and HF, and combinations thereof, radios for military transport, trainer, utility and staff aircraft."

- **USML Navigation Equipment.** As is the case with military communications equipment, military navigation equipment is likewise required for military transport, trainer, utility and staff aircraft to perform their missions. Such equipment is necessary to use military navigation aids inside and outside the United States. Examples include the AN/ARN-147 VOR/ILS/MB, ARN-153 TACAN, and AN/ARN-149 ADF. Radar altimeters such as the APN-194, and transponders such as the APX-101, are included in this category of navigation equipment. The installation of this navigation equipment in a transport, trainer, utility or staff aircraft does not alter the mission of these aircraft but rather permits the aircraft to be used for their intended purposes. We suggest the proposed definition of "mission systems" be revised to exclude "military navigation equipment for military transport, trainer, utility, and staff aircraft."

- **Aircraft Survivability Systems.** Transport, utility and staff aircraft may be subject to various threats in a variety of operational settings. The installation of survivability systems, however, does not alter the mission of these aircraft. Examples of survivability systems found on transport, utility and staff aircraft include AAR-60 MAWS (missile approach warning system), ALE-47 CMDS (countermeasures dispensing system) and ALQ-144 IRCM (infrared countermeasures). As with communication and navigation systems discussed above, we suggest a revision to the proposed definition to exclude survivability systems from the definition of "mission systems."

- **Surveillance and Sensor Capabilities and Search and Rescue.** Some military aircraft operators use military transport or utility type helicopters for non-combat search and rescue missions. Search and rescue missions generally require that aircraft be equipped with a USML forward looking infrared radar (FLIR) unit and rescue hoist. We recommend that FLIR and rescue hoist systems for use in search and rescue be excluded from the definition of "mission systems."

- **Civil Aircraft with "Mission Systems."** Many civil aircraft utilize certain USML articles for non-military missions, such as FLIRs and direction finders for civil search and rescue. MX-15i and 12DS200 FLIRs and MDF-124F direction finder are examples of such articles. Also, an increasing number of civil emergency medical operators use night vision equipment. However, the installation of these articles on otherwise civil aircraft should not cause the entire platform to be subject to the USML, thus subjecting the civil platform to the same license application processing as would apply to the latest generation attack aircraft.

B. Aircraft components, parts, accessories, attachments, and associated equipment

The proposed rule enumerates a number of items in Category VIII(h) that do not appear to warrant control on the USML, namely face gearboxes, split-torque gearboxes, interconnecting drive shafts, stabilator folding systems, external stores support systems, and parts and components "specially designed" for these foregoing items; damage/failure adaptive

flight control systems; helmet mounted displays; aircraft lithium-ion batteries that provide 28 VDC or 270 VDC; and drive systems and flight control systems "specially designed" to function after impact of a 7.62 or larger projectile. Many of these items and their underlying technologies are critically important to the commercial aerospace industry and their control on the USML could hinder rational application of these technologies in civil aircraft applications.

(h)(2) Face gearboxes, split-torque gearboxes, variable speed gearboxes, synchronization shafts, interconnecting drive shafts, and gearboxes with internal pitch line velocities exceeding 15,000 feet per minute, and parts and components "specially designed" therefore

Gearboxes and drive shafts, and parts and components thereof, specified in paragraph (h)(2), and the related technology, should be moved to the CCL. These types of gearboxes will have significant application in the commercial market place to improve the performance of civil helicopter transmissions. Additionally, there is no known exclusive military significance relative to these items or their underlying technologies.

Face Gearboxes. Face gear technology offers an alternative to bevel gearing for high reduction ratio angle changes. Face gearing allows the designer additional flexibility, which may result in a lighter weight design for a given system reduction ratio. It has the potential to reduce weight and has no known exclusive military significance.

Split Torque Gearboxes. Split torque technology allows the reduction in width of an output gear by driving it with many, rather than a few, input pinions. Since adding more pinions ("splitting" the torque) is a lighter weight approach than increasing gear width, split torque technology offers the potential for a lighter system and has no known exclusive military significance.

Variable Speed Gearboxes. Helicopters gearboxes typically are of a fixed ratio and operate only at one speed during normal conditions because the engine and blade designs can be better optimized if the speed is known. Current aircraft with fixed ratio gearboxes, both military and commercial, typically operate at different speeds during certain conditions such as recovery from an engine failure, or during autorotation. There are some aircraft that operate at more than one speed during normal conditions.

Synchronization Shafts, Interconnecting Drive Shafts. These items and their associated technologies are associated with aircraft that have intermeshing rotors. This technology has no known exclusive military significance, and is applicable to any aircraft that utilizes intermeshing rotors.

Gearboxes with Internal Pitch Line Velocities Exceeding 15,000 fpm. Most, if not all, helicopters with turbine engines utilize gearboxes with pitch line velocities exceeding 15,000 fpm. There is no known military significance to gearboxes that operate at this speed, and many commercial examples exist, such as the Sikorsky model S-76 and S-92A helicopters.

If gearboxes and shafts are retained in Category VIII(h), the entry should be revised to limit the control to those items "specially designed" for the controlled aircraft. As currently stated, a gearbox used on a commercial aircraft and also used on a military aircraft would be controlled under Category VIII(h)(2). In this case, using "specially designed" for the item (and not just the parts and components) is justified.

(h)(3) Stabilator folding systems, parts and components specially designed therefor

Many Sikorsky Aircraft model helicopters have stabilators and a fair percentage can be folded (mostly on naval models). Reducing the amount of space required for storage, which certainly is beneficial for shipboard storage, also is a benefit for storage in commercial hangars. As such, we do not believe folding capability provides a critical or significant military advantage or capability.

(h)(6) External Stores Support Systems and parts and components "specially designed" therefor

As opposed to ordinance carriage, external stores for fuel or other non-militarily unique purposes should be covered on the CCL. There are civil applications where external fuel tanks may be necessary, such as for search and rescue and offshore oil rig support. In addition, military transport helicopters that may move to the CCL may have structural and hardware provision already built into the baseline aircraft. The (h)(6) control should be revised to relate to ordinance and other unique military applications that provide a critical military advantage to the United States.

(h)(7) Damage/Failure-Adaptive Control Systems

This technology is required for civil applications as specified under the FAR Part 29 regulations that require a helicopter to be able to remain controllable in the event of a bird strike. In fact, the weight of the birds and the damage that they could cause would be significantly greater than a smaller military round. Most all current flight control systems have some form of failure adaptation (Fault Detection and Accommodation, or FDA). This may be as simple as selection logic to decide which sensor has failed, and to use a backup or alternate sensor. The term 'damage' is not military specific, as most redundant or failure-tolerant systems can adapt to faults regardless of the cause. Damage could be caused by natural causes (*e.g.*, lightning) or maintenance errors. In addition, failure adaptive flight control systems are by nature developed to enhance safety, which is not a military requirement. Given the prevalence of fly-by-wire flight controls in modern commercial aircraft, failure adaptive flight controls will become increasingly more common throughout the industry.

If the entry is retained, it should be limited to systems "specially designed" for §121.3 aircraft, or define military-specific damage conditions or military-specific threats, such as Electromagnetic Pulse (EMP).

(h)(13) Aircraft lithium-ion batteries that provide 28 VDC or 270 VDC

Lithium-ion batteries are easily and readily available, in off-the-shelf configurations, on the international commercial market: Countries including China and Korea are principal manufacturers of the batteries utilized in U.S.-produced consumer goods.

As a result, best-in-class batteries are widely and freely available at open market prices globally. The proposed addition of these batteries to the USML would not restrict access to lithium-ion technology while imposing a disadvantage for U.S. manufacturers.

The proposed revision unfairly restricts the aviation industry: To obtain a battery with an operating voltage of 28 VDC or 270 VDC does not, in any way, require skills that would provide a competitive military advantage to the United States. To arrive at a particular voltage, battery cells are combined into battery systems (or 'packs'). The voltage of individual cells in a pack is determined by the specific chemistry (generally 3.5V-4.5V for lithium-ion). This combining of cells into packs does not require sensitive information or skills. With no clearly defined strategic rationale, it is unclear why 28 VDC/270VDC level batteries are enumerated, the only impact of which is to restrict the aviation industry as one of the only industrial systems to utilize 28 VDC as a standard.

Lithium-ion chemistry is an existing commercial technology that has been applied to military usage: Lithium-ion batteries were first utilized in commercial products. Current battery cells made for commercial and military applications do not differ materially in their chemistry, but in the level of testing, safety rigor and certification applied to those *packs* intended for military use. The knowledge needed to convert a battery from commercial product to military applications is easily learned and publically available. Lithium-ion battery technology of any voltage is an applied commercial technology.

The U.S. Government has existing relations with international companies for the sharing of U.S. insight on lithium-ion chemistry: As an example, Argonne National Laboratory, where lithium-ion chemistries have been pioneered since the early 1990's, currently maintains active international partnerships for the distribution of their technical knowledge. Specifically, in June 2009 the Laboratory signed an agreement with BASF for the world-wide production, distribution and marketing of proprietary technology patented by Argonne researchers.

Restricting battery chemistries and voltages will have a direct, negative impact on the commercial aviation market: Existing commercial products, including those produced by Sikorsky Aircraft, utilize batteries for functions including emergency power and engine starting. Future aircraft concepts utilizing all-electric propulsion have the potential to reduce operating costs over fossil fuel powered concepts. Lithium-ion chemistries provide significant technical benefits over earlier chemistry batteries. Disallowing the use of the technology on commercial products could remove some of the competitive advantage of U.S. manufacturers.

If the proposed rule is accepted, clarification will be required: If the proposed new Category VIII(h) specifically enumerates lithium–ion batteries, for implementation purposes the Department should provide clarification as to the location of the 28 VDC/270 VDC measurement. Depending on the measurement location, the regulation could inherently restrict *all* lithium-ion technology from use on aircraft rather than a specific subset. Such a ruling would be excessively onerous, truly imposing a competitive disadvantage on the aviation industry exclusively.

(h)(15) Helmet Mounted Displays

Helmet mounted displays ("HMDs") will be more common in future civil applications, even to the effect of cueing sensors and tracked helmets. Many commercial pilots today want to have HMDs in commercial helicopters. Commercial business jets today are equipped with Head Up Displays ("HUDs") that provide primary flight information to the pilot as well as incorporating, in some instances, enhanced vision video. These systems allow the pilot to remain eyes out while landing, yet having all the primary flight information available before them.

Fixed HUDs do not work well in helicopters, especially in search and rescue missions where the pilot is looking in many different directions. To have the primary flight data available on a HMD would be of great advantage to the commercial helicopter pilot in the same way that the fixed HUD is advantageous to the commercial fixed wing pilot. It is therefore recommended that the USML avoid the generic use of the term "Helmet Mounted Display" and focus instead on the military uses of a helmet mounted display and tracking system as it would relate to specific military uses. It is recognized that HMDs with functionality that is militarily unique in a significant manner, such as for weapons targeting, would appropriately remain on the USML. However, the circumstance of a HMD being developed and used for a military aircraft should not, in and of itself, cause the HMD to be on the USML if the unit only provides basic flight information and there are no significant military features.

(h)(16) Vehicle Management Computers

The term "Vehicle Management Computer" is vague and can be interpreted in different ways. A computer that processes a rotor speed signal, weight-on-wheels discretes, caution/advisory signals, or fuel quantity/flow, can be considered by some to be a "vehicle management computer", yet such computers exist on all types of commercial aircraft today. Likewise, a health and usage monitor ("HUMS") computer that receives airframe sensor inputs and assesses the physical health of the airframe and drive train components can be considered to be a "vehicle management computer", yet they are used today on many commercial aircraft. We recommend the Department avoid the use of generic terms like vehicle management computer and, instead, provide a very specific description of what is meant by "vehicle management computer" in terms of functionality. Furthermore, only vehicle management computers with unique significant military functionality should be included on the USML.

(h)(18) drive systems and flight control systems "specially designed" to function after impact of a 7.62mm or larger projectile

Given that military transport, utility and staff helicopters fly relatively low and slow, and during the normal course of conducting transport and utility operations will be subject to threats in a variety of operating environments, they should be permitted to have defensive features, such as an appropriate level of ballistic tolerance, without causing the aircraft, or their drive or flight control systems that may be ballistically tolerant, to be placed on the USML.

C. Other Comments

VIII(a)(10). The Department should clarify whether Category VIII(a)(10), Target drones, includes decoys such as the Miniature Air Launch Decoy.

VIII(h)(1). Category VIII(h)(1) lists components "specially designed" for the listed aircraft. Gas turbine engines fall under both the existing and proposed definitions of 'components.' Because gas turbine engines are proposed to be covered under Category XIX, to eliminate any possible confusion, Category VIII(h)(1) should specifically note that engines are controlled under Category XIX.

Implementation. UTC believes that the transfer of items of lesser military significance from the USML to the CCL will result in reduced cost and improved business flexibility. However, the transition of potentially tens of thousands of parts and components, each with a multiplicity of associated technical documents, will require a very substantial effort requiring a transition period to train staff, determine new jurisdictions and classifications, adjust ERP systems and other automated tools, change document markings, and coordinate with suppliers, distributors and customers. The philosophy of the phase-in should be to avoid unnecessary costs and schedule delays. To ease concern and possible confusion over this transition, the rule should explicitly address the phase-in of changes, as follows:

- Permit a phase-in of changes through interim and final rules. The EAR underwent a similar change in 1996, and the transition was implemented with an interim rule effective April 24, 1996, with compliance not compelled until November 1 of the same year. A similar extended implementation time frame would allow companies to change computer systems, update marking procedures, and start the process of reviewing the jurisdiction and classification of a large number of items. Due to the size and complexity of the effort, we recommend a nine month phase-in period.

- Permit 'grandfathering' of existing item jurisdiction and classification. This essentially makes the transition of items from the USML to CCL optional. Items would be re-categorized when there is a business case to transition eligible items.

- Permit 'grandfathering' of existing and in-process licenses and agreements. There may be cases where amending a Department of State authorization may be faster than applying for a new BIS license. In this case, the item(s) would necessarily retain the jurisdiction stated in the authorization. Continuing to license an item under the original jurisdiction should not preclude transitioning the item to the CCL without agency agreement.

* * *

For additional information, please contact the undersigned at (202) 336-7467 or, with regard to technical proposals, Kevin Larkin at Sikorsky Aircraft at (203) 386-5948.

Sincerely,

Peter S. Jordan
Director, Senior International Trade Counsel
United Technologies Corporation

Cessna Aircraft Company
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December 22, 2011

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
Bureau of Political Military Affairs
U.S. Department of State
Washington, DC 20522–0112

RE: RIN 1400-AC96 (ITAR Amendments – USML Category VIII)

Dear Mr. Shotwell:

Cessna Aircraft Company appreciates the opportunity to comment on the Department of State's proposed rule to update Category VIII of the USML in parts 121.1 and 121.3 of the ITAR as published in the Federal Register on Nov 7, 2011. Cessna supports the administration's current export reform initiative and believes such efforts are necessary to update the export control system, enhance the competiveness of U.S. businesses in global markets, and meet our national security requirements.

In response to the request for comments in RIN 1400-AC96, we respectfully submit the comments below for your review and consideration.

Kind Regards,

Brian Martling
Sr. Trade Compliance Specialist
Cessna Aircraft Company

Part 121 NPRN Comments

121.1 (a)(11) Aircraft equipped with any mission systems controlled under this subchapter;

121.3 (a) In Category VIII, except as described in (b) below, "aircraft" means developmental, production, or inventory aircraft that:

> **(6) Incorporate any "mission systems" controlled under this subchapter. "Mission systems" are defined as "systems" (see § 121.8(g) of this subchapter) that are defense articles that perform specific military functions beyond airworthiness, such as by providing military communication, radar, active missile counter measures, target designation, surveillance, or sensor capabilities.**

121.8 (g) A system is a combination of end-items, components, parts, accessories, attachments, firmware or software, specifically designed, modified or adapted to operate together to perform a specialized military function.

> While this combination of regulatory texts certainly results in a more focused version of the current Category VIII(a) language: "Aircraft…modified or equipped for military purposes. This includes, but is not limited to…" The result appears to still be that simple incorporation or integration of a defense article may still shift an entire aircraft onto the USML because it is now "equipped" with a "mission system" that "performs a specific military function beyond airworthiness." In the world of special mission aircraft (air ambulance, runway calibration, flight training, etc.), there is a significant delta between a task that may be deemed "beyond airworthiness" and one that performs a "specific military function", and that delta remains undefined in this proposed text.
>
> It makes sense that there should be a distinction between the types of aircraft that are called out in the proposed texts of 121.1(a)(1)-(10) and aircraft potentially captured by 121.1(a)(11), which could be a simple as a civil certified commercial aircraft that incorporates a third party USML component. The purpose of the distinction is not to avoid licensing, but to avoid potential imposition of USML control of commercial data and services because it "relates" to a defense article enumerated in paragraphs (a) through (h) of this category defined in 121.1(i). It has been the State Department's policy and guidance that commercial parts, data, and services for otherwise civil certified commercial aircraft remain controlled by the CCL and are not considered defense articles or services, even when provided in support of an aircraft modified to incorporate USML components. Unfortunately, the actual regulatory text does not appear support this position. If an "aircraft" is designated a "defense article", then the provision to a foreign person of ANY assistance with or for the defense article may be literally deemed a "defense service" per §120.9(a)(1) & (2). This defense service loophole is how past enforcement

actions were taken against companies for providing EAR99 technical data to a foreign person in support of a defense article. It would be beneficial if this apparent contradiction was clearly addressed in the new regulatory language and that the regulatory text matched the Department's policy and guidance.

A technical note to 121.1(a)(11) should suffice. Note: for the purposes of §121.1(i) and §120.9(a), technical data and services unrelated to "mission system" equipment installed onto or integrated into otherwise civil certified commercial aircraft platforms remain subject to the EAR under the relevant ECCN.

(h)(2) Face gear gearboxes, split-torque gear boxes, variable speed gearboxes, synchronization shafts, interconnecting drive shafts, and gear boxes with internal pitch line velocities exceeding 15,000 feet per minute and parts and components "specially designed" therefore;

This is too broadly drafted language. Many kinds of turbo machinery can meet these requirements. Example: jet starter/generators and hydraulic pumps are connected by way of a single shaft and a simple gear box, the speed of the engine is varying and in the speeds of tens of thousands of RPM. So, this could be an interconnecting, split torque, variable speed gear box having velocities exceeding 15K FPM pitch lines. It might even be possible to meet these parameters with a simple starter configuration.

If this entry ended, "…and unique parts and components therefore 'specially designed' for a military application." This language would more clearly identify items requiring elevated controls and free existing commercially available items from a new ITAR restriction.

(h)(6) Bomb racks, missile launchers, missile rails, weapon pylons, pylon-to-launcher adapters, UAV launching systems, and external stores support systems, and parts and components "specially designed" therefor;

Similar to (h)(2) comments, the inclusion of "external stores support systems" is too broad. There are many commercial, civil external stores support systems that could be captured by this language. Examples would include ice measurement pods, weather radar pods, fuel pods, flight test instrumentation pods, etc. The generic "external stores" language essentially controls all aircraft with external hard points of any kind. This could be clarified by ending the entry with"…external stores support systems 'specially designed' for a military application and parts and components therefor".

(h)(7) Damage/failure-adaptive flight control systems;

The definition of "damage/failure-adaptive" should be more clearly defined to implement such a control. Such a definition should clearly exclude rate-based or acceleration-based flight control systems in that such systems do not change or adapt in direct response to damage or system failure though they would continue to provide control in those events, as well as flight control systems that change mode based on sub-system or component failures. Mode change is a civil

fly-by-wire design practice instituted on multiple civil airframes since the introduction of the initial commercial fly-by-wire aircraft, including the Airbus A320 which entered service in 1988. The ability to transition to alternate control law configurations to control flight path and/or structural stability is necessary to support requirements imposed on such systems by federal and international law.

(h)(8) Threat-adaptive autonomous flight control systems;

A formal definition of "threat" and "autonomous" would be required to implement such a control. Otherwise, the Garmin "blue button" system that rights the aircraft from abnormal attitudes could be considered "threat adaptive", or future states of Terrain Collision Avoidance Systems where aircraft automatically avoid other aircraft could be considered "threat adaptive". The addition of "…'specially designed' for a military application" would also clarify here.

(h)(12) UAV flight control systems and vehicle management systems with swarming capability, i.e., UAVs interact with each other to avoid collisions and coordinate targeting.

Under the FAA's NextGen program, to live in the National Airspace System, UAVs will likely be required to "interact with each other" to sense and avoid other aircraft. This text should be removed and the control could be better stated as, "UAV flight control systems and vehicle management systems with the capability to swarm and coordinate targeting."

(h)(13) Aircraft lithium-ion batteries that provide 28 VDC or 270 VDC;

The inclusion of 28 VDC lithium-ion batteries would capture existing commercial civil certified main aircraft batteries. In March 2010, the Cessna Citation CJ4 gained U.S. FAA civil certification equipped with a lithium-ion main aircraft battery that operates on a 28 V electrical system; in May 2011, EASA civil certified the same. Cessna is currently working toward FAA civil certification of an optional lithium-ion main aircraft battery for the Cessna Citation Sovereign, and the newly announced Cessna Citation TEN is intended to have a lithium-ion main aircraft battery as well; both aircraft also operate on a 28 V electrical system. The inclusion of 28 VDC lithium-ion batteries as unique items requiring USML control would impact hundreds of civil certified aircraft in the field and impede civil aviation's momentum in adopting Li-Ion battery technology. For these reasons, Cessna is opposed to the inclusion of 28 VDC Lithium-Ion batteries in section (h)(13).

At minimum, the text, "28 VDC" should be stricken from (h)(13). Alternatively, it could conclude with " …'specially designed' for a military application". The 28 V platform is the single most common electrical platform of civil aircraft and there is nothing about 28 VDC that has significant military or intelligence applicability such that control under the USML is necessary. However, this language should also be reconsidered in whole as the technical parameters have almost made it an empty box at onset. While most civil aircraft operate on 28 V systems, the main batteries do not actually "provide" 28 VDC (volts direct current) as the proposed text is worded. The batteries actually provide 24-26 VDC for starting and then are charged at 28 V

nominal as provided by the generators. The similar situation also exists with 270 V systems, except that the batteries provide in excess of 270 volts direct current.

(h)(16) Fire control computers, mission computers, vehicle management computers, integrated core processors, stores management systems, armament control processors, aircraft-weapon interface units and computers (e.g., AGM-88 HARM Aircraft Launcher Interface Computer (ALIC)) "specially designed" for aircraft;

The terms "mission computers", "vehicle management computers", and "integrated core processors" are overly broad designators subject to a wide variety of interpretation. The ending of "…'specially designed' for a military application" would clarify here as well.

(i) Technical data (as defined in §121.10 of this subchapter) and defense services (as defined in §120.9 of this subchapter) directly related to the defense articles enumerated in paragraphs (a) through (h) of this category.

As long as otherwise civil certified commercial aircraft can be captured under 121.1(a)(11) this text could potentially capture any and all data, including otherwise commercial data related to a commercial aircraft equipped with USML components. As drafted, it is immaterial whether such data is applicable to the specific "mission system" equipment requiring USML control; inasmuch as the data is "directly related" to the (a)(11) defense article (aircraft), it is controllable by §121.1(i). This is undoubtedly not the intent of this text; again reference comments and suggested note on 121.1(a)(11) above.

NOTE: For the purpose of these comments, the definition of "specially designed" intended is that published in the December 2010 ANPRM (75 FR 76935).

December 22, 2011

Directorate of Defense Trade Controls (DDTC) Response Team
U.S. Department of State
Washington, DC 20520

VIA ELECTRONIC SUBMISSION ON WWW.REGULATIONS.GOV

RE: ITAR Amendments – Category VIII; RIN 1400-AC96

Dear DDTC Response Team:

These comments are provided on behalf of the Forging Industry Association (FIA). FIA is the primary trade association representing the bulk of forging capacity in North America. The North American forging industry is comprised of approximately 500 forging operations in 38 states, Canada and Mexico.

Forging is one of the oldest known metalworking processes, where metal is pressed, pounded or squeezed under great pressure into high-strength parts known as forgings. The process is usually performed by preheating the metal to a desired temperature before it is worked. Forged parts are strong and reliable and therefore, vital in safety-critical applications. Rarely seen by consumers, forgings are normally component parts inside assemblies, and many forgings go into both civilian and military aircraft.

FIA applauds the Administration's overall efforts to amend the International Traffic in Arms Regulations (ITAR), and specifically its efforts to revise Category VIII (aircraft and related articles) of the U.S. Munitions List (USML) to describe more precisely which military aircraft and related defense articles warrant control by the USML, which articles are subject to the Export Administration Regulations (EAR) administered by the Department of Commerce, and which articles require no export controls. We are also submitting similar comments to the Department of Commerce's Bureau of Industry and Security in response to their Proposed Rule: *Revisions to the Export Administration Regulations (EAR): Control of Aircraft and Related Items the President Determines No Longer Warrant Control Under the USML.*

If our understanding of the proposed rule and our discussions with Administration officials are accurate, then upon finalization of these rules, **ONLY** those forgings that are "specially designed" for a specific list of U.S.-origin aircraft that have low observable features or characteristics (B-1B, B-2, F-15SE, F/A18E/F/G, F-22, F-35 and variants thereof, F-117, or United States Government technology demonstrators) are subject to continued control on the USML. All other forgings "specially designed" for a military aircraft would be subject to the jurisdiction of the Department of Commerce's Commerce Control List (CCL), under the Export Administration Regulations (EAR), and consistent with multilateral export control regimes, including the Wassenaar Arrangement Munitions List (WAML).

The WAML's category 16 (which would be implemented in the newly proposed EAR ECCN 9A610.x) provides a control regime for forgings, castings and other unfinished products "specially designed" for

specified end items such as weapons, ammunition, bombs, aircraft, etc. That control regime applies to unfinished products only *"when they are identifiable by material composition, geometry or function."*

Many forgings used in aircraft are shipped to the customer in "raw" form, and require substantial additional machining and manufacturing processes before being installed in the aircraft. In fact, the industry commonly refers to the "90/10 ratio" of what is shipped versus what ends up in the aircraft. As a result, FIA believes that many aircraft forgings are not *"identifiable by material composition, geometry or function"* when they are shipped to the customer. We would also argue that a part number alone should not make a forging *"identifiable by material composition, geometry or function"*

With regard to both the December 2010 State Department proposed definition of "specially designed", as we understand it a forging would meet that definition ONLY if it has properties that *"(i) distinguish it for certain predetermined purposes, (ii) are directly related to the functioning of a defense article, and (iii) are used exclusively or predominantly in or with a defense article identified on the USML".* However, we understand that the proposed definition of "specially designed" in the July 15, 2011 Commerce Department proposed rule is being finalized as the common definition. Under that definition, we believe most forgings would still not meet the definition of "specially designed", and will be controlled by language in the new CCL consistent with the WAML.

FIA believes this approach is appropriate, since it only retains USML control of any critical forgings that might contribute to the properties of key U.S.-origin aircraft having low observable features or characteristics. FIA believes that to the extent that the vast majority of aircraft forgings need continued export controls, the CCL is the appropriate place for those controls to reside, not the USML.

Thank you for the opportunity to comment on the proposed rule. FIA would be happy to answer any questions you may have regarding export control reforms and their effect on U.S. forgers. Please contact our Washington Representatives: Laurin Baker at 202-393-8525, or Jennifer Baker Reid at 202-393-8524 if you have any questions.

Sincerely,

Roy Hardy
Executive Vice President

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December 22, 2011

Directorate of Defense Trade Controls (DDTC) Response Team
U.S. Department of State
Washington, DC 20520

VIA ELECTRONIC SUBMISSION ON WWW.REGULATIONS.GOV

RE: ITAR Amendments – Category VIII; RIN 1400-AC96

Dear DDTC Response Team:

These comments are submitted on behalf of the Industrial Fasteners Institute (IFI), the trade association that represents 85% of the North American production capacity for mechanical fasteners – the nuts, bolts, screws, and rivets that hold together everything we use in everyday life. These fasteners are particularly critical for assembling aircraft, both military and civilian, and therefore, the application of export controls is of particular importance to fastener manufacturers. Most fastener manufacturers are small to medium-sized businesses, and the U.S. fastener industry employs approximately 42,000 employees.

IFI applauds the Administration's overall efforts to amend the International Traffic in Arms Regulations (ITAR), and specifically its efforts to revise Category VIII (aircraft and related articles) of the U.S. Munitions List (USML) to describe more precisely which military aircraft and related defense articles warrant control by the USML and which articles are subject to the Export Administration Regulations (EAR) administered by the Department of Commerce. We are also submitting similar comments to the Department of Commerce's Bureau of Industry and Security in response to their Proposed Rule: *Revisions to the Export Administration Regulations (EAR): Control of Aircraft and Related Items the President Determines No Longer Warrant Control Under the USML.*

In 2008, a clarifying note was added to 22 CFR Part 121 explaining that Section 17c of the Export Administration Act applied to "dual use" fasteners that meet the following definition:

> *"any part or component that (a) is standard equipment; (b) is covered by a civil aircraft type certificate (including amended type certificates and supplemental type certificates) issued by the Federal Aviation Administration for civil, non-military aircraft (this expressly excludes military aircraft certified as restricted and any type certification of Military Commercial Derivative Aircraft, defined by FAA Order 8110.101 effective date September 7, 2007 as "civil aircraft procured or acquired by the military"); and (c) is an integral part of such civil aircraft, is subject to the jurisdiction of the Export Administrative Regulations (EAR)." [emphasis added]*

That language, which has served the U.S. fastener industry well, would be removed from the ITAR regulations by the new proposed rule because it would no longer be necessary. If our understanding of the proposed rule and our discussions with Administration officials are accurate, then upon finalization of these rules, **ONLY** those fasteners (nuts, bolts, screws, rivets, etc.) that are "specially designed" for a specific list of U.S.-origin aircraft that have low observable features or characteristics (B-1B, B-2, F-15SE, F/A18E/F/G, F-22, F-35 and variants thereof, F-117, or United States Government technology demonstrators) will be subject to continued

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control on the USML. All other fasteners "specially designed" for a military aircraft would be subject to the jurisdiction of the Department of Commerce's Commerce Control List (CCL), under the EAR.

With regard to the proposed definition of "specially designed": The State Department's proposed definition from its December 2010 proposed rule would mean that a fastener would ONLY be "specially designed" if it has properties that *"(i) distinguish it for certain predetermined purposes, (ii) are directly related to the functioning of a defense article, and (iii) are used exclusively or predominantly in or with a defense article identified on the USML".* Therefore, under that proposed definition and the proposed changes to the USML, most fasteners used in the specific list of U.S.-origin aircraft as noted above would not qualify as "specially designed" for those military aircraft, and would not be subject to the USML.

However, the Commerce Department proposed a definition of "specially designed" in its July 15, 2011 proposed rule that according to that rule, would be considered common to both the State Department and the Commerce Department for purposes of ITAR and EAR. The July 15, 2011 proposed definition contains specific language that includes the following text:

> *"(d) items that are not so separately 'enumerated' for purposes of this definition, are also not considered ''specially designed'' in any category of the CCL if they are: (1) A single, unassembled part used in multiple types of civil items, such as threaded fasteners (e.g., screws, bolts, nuts, nut plates, studs, inserts), other fasteners (e.g., clips, rivets, pins), common hardware (e.g., washers, spacers, insulators, grommets, bushings), springs and wire; or (2) An item specifically excluded from control on the USML or the CCL; or (3) A ''part'' or ''component'' used as a ''part'' or ''component'' of an end item in ''serial production'' and not 'enumerated' on the USML or CCL (i.e., the end item is an EAR99 item), and the part's or component's form, fit, and function have not been altered for use in another end item enumerated on the USML or CCL after ''serial production'' of the end item not enumerated on the USML or CCL has begun; or (4) A ''part'' or ''component'' that can be exchanged with an EAR99 or AT only controlled ''part'' or ''component'' on a one-for-one replacement basis without modification to the form, fit and function of the EAR99 or AT-only ''part'' or ''component,'' and the EAR99 or AT-only part's or component's function is identical to the ''part'' or ''component'' at issue."*

We strongly urge the State Department and the Commerce Department to adopt the most recent proposed definition of "specially designed" as a common definition for all export control purposes and the fastener-specific examples to make clear that most fasteners are not "specially designed" for military aircraft.

Overall, IFI supports the proposed rule and the approach by which the Administration would retain USML control of critical fasteners that contribute to the properties of key U.S.-origin aircraft having low observable features or characteristics, and make clear that only those fasteners "specially designed" for military aircraft will be subject to EAR controls.

Thank you for the opportunity to comment on the proposed rule. IFI would be happy to answer any questions you may have regarding export control reforms and their effect on fastener manufacturers. Please contact our Washington Representatives: Laurin Baker at 202-393-8525, or Jennifer Baker Reid at 202-393-8524 if you have any questions.

Sincerely,

Rob Harris
Managing Director

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Rolls-Royce North America Inc.
Vice President, Global Trade Compliance
1875 Explorer Street, Suite 200
Reston, Virginia 20190, USA

December 22, 2011

Online Submittal – Regulations.gov Portal

Mr. Charles Shotwell
Director, Directorate of Defense Trade Controls Policy
Department of State
SA-1, 12th Floor
Washington, D.C. 20522-0112

ATTN: Proposed Rule (RIN 1400-AC96)

RE: Regulatory Changes – USML Category VIII
(Public Notice: [7673])

Dear Mr. Shotwell:

On behalf of Rolls-Royce North America Holdings Inc. (the Company), I am pleased to respond to the November 7, 2011 Federal Register Notice requesting comments on the proposed amendments to USML Category VIII of the International Traffic in Arms Regulations.

Rolls-Royce has reviewed the proposed changes, and has the following comments.

With few exceptions, Rolls-Royce is pleased with the proposed amendments to USML Category VIII. Rolls-Royce's comments and suggestions are primarily aimed at adding clarifying language, removing perceived redundancies and aligning USML export reform goals of having a positive list.

(1) In order to distinguish the items controlled in USML Category VIII versus the new "600 series" items in Category 9A610 of the CCL, it is recommended that the proposed **121.1(a)** be amended to the following:

Aircraft, **specifically designed, developed, configured, modified or adapted for military purposes** as follows:

(2) Rather than have a separate **121.3(a)** entry, Rolls-Royce recommends that 121.3(a) is moved to be inclusive within Category VIII. We believe 121.3(a)(1-6) are descriptors for 121.1(a) entries and should be incorporated into 121.1(a).

(3) **121.1(a)(11)** seems too broad. We recommend this entry be deleted or revised and aligned with 121.3(a)(6). The broad terminology used seems to counter the goal of creating a more positive list. This is inconsistent with the intent for current ITAR

platforms not specifically enumerated moving to the EAR "600" series. While 121.3(a)(6) attempts to clarify what a "mission system" is, the majority of military aircraft would contain at least one of the systems described.

(4) Consider revising **121.1(f)** to say "Developmental **military** aircraft and "specially designed" parts, components, accessories, and attachments therefore. **This includes aircraft which are being developed principally to demonstrate and/or validate new technologies or improvements to current technology with specific applicability to defense articles.**"

(5) Revise **121.1(h)** to say, "Components, parts, accessories, attachments and associated equipment **for items specifically enumerated under 121.(a) as follows:…"**

(6) With one of the key goals of export reform being to create a more positive list of controls, Rolls-Royce feels that **121.1(h)(2)** falls short. In general, the items outlined in 121.1(h)(2) represent gearbox and shaft components that are not unique or predominant to military applications. While some of the technologies are relatively new to the aerospace industry, they are not inherently military. For example, Rolls-Royce civil Model 250 engines exceed "internal pitch line velocities of 15,000 feet per minute". Rolls-Royce recommends that 121.1(h)(2) either be moved to the new "600 Series" in its entirety or be amended to define true military unique thresholds through positive controls.

(7) **121.1(h)(1)** appears to be controlling items for reduced observability. We recommend capturing the parts and components for reduced observability and not specific aircraft.

(8) **Rolls-Royce recommends deleting 121.1(h)(14)** as STOVL technology has commercial benefits. Any sensitive technologies could be rolled into **121.(h)(9).**

(9) While Rolls-Royce agrees with the intent of **121.1(h)(19)(iii-iv)**, the implementation of these controls would be difficult. It is not uncommon for classified items to be developed and manufactured using both classified and unclassified data. Rolls-Royce suggests deleting **iii and iv**.

(10) ITAR versus EAR Export Authorizations: The transfer of parts to the EAR CCL Category 9 subcategory 600 should not result in additional licensing requirements. However, as a result of the transfer, there will be a loss of ability to utilize specific exemptions/licensing for military parts and the associated technical data. The majority of the exceptions will be severely limited for use as well. The use of the following exemptions/licensing will be affected by the transfer:

- ITAR 123.4(a)(1) Imports for Overhaul, Service or Repair/TMP – The exemption allows for a four year period where the exception only authorizes a one year period. This is an additional burden to industry.
- DSP-73/TMP – The DSP-73 allows for up to four years while the exception only allows for one year. This is an additional burden to industry.

- ITAR 125.4(b)(5)/TSU – TSU is not available for use and STA and GOV are limited by the proposed language in the Federal Register Notice.
- TAA and MLA re-export/retransfer authorization – There is no additional re-export/retransfer authorization equal to TAAs and MLAs. This will require additional license from the Department of Commerce on a transaction by transaction basis.

(11) Under amended **Part 740, Supplement 4**, .x parts and components are ineligible for license exception STA. Rolls-Royce believes that the license approval rate for .x parts and components to STA countries is likely to be near 100%. Therefore, it is recommended that Supplement 4 be deleted or amended to allow license exception STA for .x parts and components.

(12) The Build-to-Print definition proposed for **Part 772.1** of the EAR is too restrictive. Given that this is an EAR definition as opposed to an ITAR definition, restricting assistance seems to suggest a control for defense services. Also, while the ITAR definition of build-to-print includes "specifications" the EAR definition of Build-to-Print excludes "specifications". Additionally, while engineering drawings are releasable, it could be viewed that drawings are not releasable if the drawings contained any information listed in the sub-items. For example, if an engineering drawing had a note regarding a method for coating a component, it could be interpreted as "detailed manufacturing know-how".

These concerns could be mitigated as follows:

"Build-to-Print Technology" is "production" "technology" that is sufficient for an inherently capable end user to produce or repair a commodity from engineering drawings, specifications, computer models and quality acceptance, test and inspection criteria. Supplemental information regarding the following is not within the scope of "build-to-print technology":

(i) "development" "technology", such as design methodology, engineering analysis, detailed manufacturing or process know-how;
(ii) production engineering or process improvement aspect of the "technology" or
(iii) requiring assistance from the provider of the technology to produce or repair the commodity, beyond providing clarification or interpretation of the information provided (e.g. drawings, specifications, computer models, and quality acceptance, test and inspection criteria)

(13) The proposed ECCN 9B610 regarding test, inspection and production equipment *and related commodities* is seen as additional controls or new controls to both the EAR and ITAR. The proposed language is too open ended and looks to add additional control to the hardware. The removal of the language "and related commodities" and addition of clarifying language will help close the open-ended control. ECCN 9B610 should therefore read as follows:

9B610 Test, inspection and production "equipment" "specially designed" for the "development" or "production" of commodities enumerated in ECCN 9A610 **and having embedded technology that is exclusively or predominately used in the "development" or "production" of the enumerated end item.**

(14) Specially Designed: There are two proposed definitions for "specially designed". The first was from the Department of Commerce and the second from the Department of State. Rolls-Royce appreciates the desire to clarify this term however the two definitions are inconsistent. We prefer the latest definition as proposed by the Department of State.

Sincerely,

William J. Merrell
Vice President, Global Trade Compliance
Rolls-Royce North America Inc.

December 22, 2011

PM/DDTC, SA-1, 12th Floor
Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
Bureau of Political Military Affairs
U.S Department of State
Washington, DC 20522-0112
Submitted via http://www.regulations.gov/

Re: RIN (1400–AC96)

To Whom It May Concern,

I am writing on behalf of the Association of University Export Control Officers (AUECO), a group of senior export practitioners at twenty two accredited institutions of higher learning in the United States. AUECO members monitor proposed changes in laws and regulations affecting academic activities, and advocate policies and procedures that advance effective university compliance with applicable U.S. export/import and trade sanctions regulations.

AUECO is specifically interested in contributing to the export control reform effort in order to ensure that the resulting regulations do not have a disproportionate impact on academic pursuits. As a result, AUECO is providing the following comments in response to the Department of State (DoS) proposal to amend the International Traffic in Arms Regulations (ITAR) to revise Category VIII (aircraft and related articles) of the U.S. Munitions List (USML) to describe more precisely the military aircraft and related defense articles warranting control on the USML.

The Need for Reciprocal Licensing Exemptions/Exceptions

As previously expressed in our comments submitted to the Bureau of Industry and Security on September 13, 2011, AUECO is concerned that in some instances transferring items to the Commerce Control List (CCL) could result in technologies being regulated in a more restrictive manner than if they were controlled under the ITAR. Under the ITAR, important general exemptions exist that can provide relief from licensing requirements.

For example, 22 CFR §125.4(b)9 allows for the export of technical data (including classified data) sent or taken by a U.S. person who is the employee of a U.S. corporation or government agency to a U.S. person employed by that U.S. corporation or government agency outside the United States for some purposes. 22 CFR §125.4(b)10 permits disclosures of unclassified technical data in the U.S. by U.S. institutions of higher learning to foreign persons who are their bona fide and full time regular employees if those employees have a permanent abode in the U.S. throughout their employment period in the U.S., are not nationals of proscribed countries, and the institution informs the employees in writing of the obligation not to transfer the technical data to other foreign nationals. A similarly important ITAR exemption for

academia is 22 CFR §125.4(b)7 which allows for technical data to be exported to the original source of import.

AUECO strongly recommends that DDTC and BIS ensure that reciprocal exemptions or similar relief to licensing requirements be provided under the EAR. In the absence of reciprocal provisions under the EAR, moving items and technologies from the USML to the CCL will increase the licensing burden at academic institutions.

Consistent Applicability of Definition of "Aircraft" Found in §121.3

While §121.3 defines the term "aircraft" for all of Category VIII, there is a lack of consistency amongst the paragraphs that could create confusion as to which paragraphs are, in fact, limited in scope by the definition in §121.3. For example, paragraph (a) begins with "Aircraft (see §121.3 of this subchapter)", whereas the following paragraphs containing the term "aircraft" do not refer the reader to §121.3. AUECO recommends that each paragraph be consistently worded such that each paragraph references the definition of "aircraft" in §121.3. Without this clarification, language such as that found in §121.1(h)16 ("specially designed" for aircraft) will confuse exporters.

Concerns with the Potential Reach of Proposed Revisions

AUECO has concerns that the move from design intent to a determination based on function and/or performance parameters will adversely affect both existing and future efforts that under the current regulations would be determined not ITAR controlled due to the absence of design intent and/or DoD funding. Under the proposed regulations there is an argument that some of these projects would now be considered ITAR controlled under the new proposed rewrite.

For example,§121.1(h) includes components such as UAV flight control systems with swarming capability, aircraft folding wing systems, and UAV launchers. As described above, a lack of consistency in the language and organization of the proposed rewrite to Category VIII leaves it unclear as to whether the definition of the term "aircraft" is applicable to all items in Category VIII. In the absence of clarification, some exporters may interpret all components listed in §121.1(h) 2-18 as being controlled under the ITAR irrespective of funding source, design intent or the aircraft on which the Component would be applied. Additionally, the UAV or other aircraft incorporating said components could also potentially be controlled under ITAR. Theoretically this would apply to an UAV incorporating one of these components whether created under a DoD contract or an NSF Grant. As only three USML Category rewrites have been released to date, it will be difficult to determine the overall scoped and breadth of this impact.

AUECO is concerned that this will have a significant chilling effect on University based research as it could lead to confusion regarding the applicability of ITAR as it pertains to University based research and development efforts. AUECO recommends that DDTC grandfather in projects that under the proposed changes could become controlled under the ITAR and provide guidance on interpretation and implementation of these and other proposed rules as they apply to University based fundamental research as well as to other R&D efforts conducted at US academic institutions.

Concerns with Lack of Relevant Definitions

AUECO is concerned that the proposed revisions to Category VIII are lacking several relevant definitions that are necessary to establish a "positive list" with a "bright line" between what is controlled on the USML, and what is controlled on the CCL. As we have stated in previous comments, it is critical for each entry to contain precise and specific terms as well as all relevant definitions for those terms. Steps should be taken to avoid ambiguous entries and should instead provide qualifying and clear descriptive terms as much as possible. With these considerations in mind, AUECO carefully examined the proposed rule and is providing the following recommendation.

A clear definition is needed for the word "armed". This is particularly true since this term is relied upon to describe which items are "aircraft" within Category VIII. While the language contained in §121.3(a)3 seems to imply that "armed" means "used as a platform to deliver munitions or otherwise destroy targets (e.g. firing lasers, launching rockets, firing missiles, dropping bombs or strafing), without a clear definition for that term, some ambiguity will remain.

AUECO is concerned that without a definition, the word "armed" in §121.3(a)3 could potentially be misunderstood to apply to aircraft "armed" with water cannons or paintball guns. AUECO recommends that §121.3(a)3 be re-written as follows:

> (3) Are armed with lasers, rockets, missiles, or bombs or are "specially designed" to be used as a platform to deliver munitions or otherwise destroy targets (e.g., firing lasers, launching rockets, firing missiles, dropping bombs or strafing);

Applicability of Category VIII §121.1(f) to the Products of DoD-Funded Fundamental Research

AUECO is concerned about the applicability of Category VIII §121.1(f) to the products of Department of Defense (DoD)-funded fundamental research. While it may be unlikely that developmental aircraft or a "specially designed" part, component, accessory or attachment would be produced under a DoD-funded fundamental research award, it is possible that this could occur.

If the mere funding by DoD of research into developmental aircraft makes the products of fundamental research defense articles, there will be a chilling effect on DoD-funded research into developmental aircraft at institutions of higher learning. Researchers will be unwilling to bring their products of fundamental research (including experimental and research aircraft, parts, components, etc.) into a DoD-funded developmental aircraft project, knowing that the resulting aircraft, parts, etc., will be automatically designated as defense articles, regardless of whether or not these items meet the criteria of §121.3(a). DoD will thereby lose the benefit of leveraging others' research products into DoD-funded fundamental research.

AUECO notes that the revised Category VII wisely avoids such a funding-related restriction on developmental ground vehicles. AUECO strongly recommends that DDTC clarifies that §121.1(f) would not, in fact, capture developmental aircraft (or "specially designed" parts, components, etc.) funded under a DoD award that qualifies as fundamental research.

The Need for Harmonized Definitions

The forthcoming harmonized definitions under the export control reform initiative are vital to the interpretation of the proposed regulation and will substantially impact AUECO's responses to this and other requests for comments. AUECO is concerned that without the final definitions of terms such as

public domain/publicly available, fundamental research, technology/technical data, and development we cannot appropriately analyze the proposed rules under consideration. For example, the definition of "development" and the redefinition of "fundamental research" are critical to the interpretation and implementation of the proposed rewrites of Category VII and VIII.

AUECO recommends that the proposed harmonized definitions be released prior to the next Federal Register notice requesting comments on export reform. We would further ask that the export community be offered the opportunity to comment not only on the proposed definitions once released, but also be afforded the opportunity to provide comments on previously closed proposed regulations when the proposed definition affects the interpretation and/or implementation of the proposed or final rule.

Closing

In closing, AUECO would like to express its appreciation for the opportunity to provide comments on these proposed changes. AUECO supports converting the USML into a "positive list", and hopes that this step will reduce jurisdictional disputes and uncertainty.

AUECO is concerned that without a lack of reciprocal licensing exemptions under the EAR, moving items and technologies from the USML to the CCL may create an increased licensing burden for universities. Additionally, as currently written, the proposed revisions to Category VIII appear to create confusion and uncertainty as to the applicability of the term "aircraft". Without consistent structure and language in each of the paragraphs under Category VIII, exporters may be forced to treat items and technologies that do not appear to provide a critical, substantial or significant military advantage as being ITAR controlled. A lack of relevant definitions also makes the proposed revisions to Category VIII concerning. For example, a lack of definition for the term "armed" is problematic, as is the lack of harmonized definitions for key terms such as "fundamental research" that are absolutely necessary to analyzing the proposed rewrite. AUECO is also concerned about the applicability of Category VIII §121.1(f) to DoD fundamental research.

Sincerely,

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LOCKHEED MARTIN

December 20, 2011

Submitted Via E-Mail (DDTCResponseTeam@state.gov)

Attn: DDTC Response Team
Directorate of Defense Trade Controls
U.S. Department of State

Re: ITAR Amendments – Category VIII (RIN 1400-AC96)

Lockheed Martin Corporation (Lockheed Martin) is pleased to submit comments on the proposed rules issued by the U.S. Department of Commerce, Bureau of Industry and Security and by the U.S. Department of State, published in the Federal Register on Monday, November 7, 2011 (76 Fed Reg. 215.) Taken together, the proposed rules describe the articles that warrant continued control under Category VIII (aircraft and related items) of the U.S. Munitions List (USML) and address how articles that are no longer controlled under Category VIII would be controlled under the Commerce Control List (CCL).

I. GENERAL COMMENTS: THE PROPOSED RULES IN THE CONTEXT OF EXPORT CONTROL REFORM

Lockheed Martin commends the Departments of State and Commerce for their continued commitment to implementing export control reform. The proposed revisions to Category VIII of the USML, published in conjunction with corresponding revisions to the CCL, are positive steps toward the creation of an export control regime that strengthens U.S. national security, focuses on the items of greatest sensitivity, reduces the number of required license applications for less-sensitive items, and may make U.S. companies more competitive abroad.

Under the proposed rules, suppliers for Lockheed Martin aircraft in the 36 countries eligible for License Exception Strategic Trade Authorization (STA-36) will be able to resupply these programs without submitting a license application for the export of many parts and components. Moreover, the reduction in license applications will likely benefit purchasers in foreign allied and partner nations, who will now be able to receive parts and components more expeditiously. In turn, Lockheed Martin expects that this will make U.S. companies' products more attractive to foreign purchasers who have, in the past, viewed cumbersome U.S. licensing requirements as impediments to trade in export-controlled items.

While the proposed rules, when implemented, are expected to have potential positive benefits for export of many defense system parts and components, Lockheed Martin does not expect the rule to have many direct benefits on export licensing for its military aircraft systems. Based on a review of the end items that would remain controlled on Category VIII of the USML, we anticipate that licenses issued by the U.S. Department of State will continue to be required to support international defense trade for all aircraft manufactured by Lockheed Martin for all

destinations. In particular, the criteria identified in Section 121.1 VIII(a) of the Department of State proposed rule are expected to capture all aircraft manufactured by Lockheed Martin and its domestic and international industry partners, as well as aircraft that Lockheed Martin markets but does not manufacture.

Technology, and how it is defined and categorized, is the "input" to the licensing regime; licensing policies and management must then take into account how technologies are to be used, by whom, and for what purpose. As a consequence, without implementation of additional reform measures to address the context in which controlled technology is actually exported and shared, Category VIII changes (and the list review-oriented exercise generally) will have only a modest effect on facilitating international defense sales and programmatic collaboration with our friends and allies. "Reform" should be focused on creating a licensing framework that is as effective and efficient as possible. To address this issue, Lockheed Martin recommends that the Administration maintain focus on completing proposed defense export licensing management reforms.

As President Obama said in August 2010, the Administration's export control reform effort should "focus our resources on the threats that matter most, and help us work more effectively with our allies in the field. . . . And by enhancing the competitiveness of our manufacturing and technology sectors, they'll help us not just increase exports and create jobs, but strengthen our national security as well." Without additional reforms that make it more attractive for our allies and partners to work with us to achieve our national security objectives, control list reform – and Category VIII changes in particular – will not have the intended result of fundamentally reforming how the United States participates in priority joint defense programs.

In its vision of export control reform, the Administration has recognized this imperative and identified several reform initiatives to promote and facilitate defense trade and cooperation with U.S. allies and partners. In particular, Lockheed Martin strongly supports the Administration's stated commitment to implement a "program licensing" framework that will have immediate benefits for U.S. Government international cooperative defense development programs. An effective program licensing framework for priority platforms and destinations would greatly enhance U.S. defense program efficiencies and costs and strengthen strategic partnerships abroad.

Defense trade reforms, which demonstrate that the United States is committed to implementing an efficient and expeditious export licensing framework for sophisticated areas of defense cooperation, are absolutely critical – providing the predictability and transparency to the defense trade system that increases U.S. competitiveness and facilitates greater international cooperation and sales. Moreover, the ability for U.S. companies to compete for international defense trade opportunities has an impact on economic growth and jobs at home, as the President noted, in the important manufacturing and technology sectors. Succeeding in these international markets will help achieve U.S. national security objectives and strengthen defense ties with these key allies and partners for decades to come.

We recognize that the Administration's extensive effort to redefine the export control lists, including Category VIII, as part of the President's Export Control Reform initiative, has required significant resources – both personnel and time – over the past two years. In 2012,

implementation of these control list reforms will require even more attention. However, a renewed focus on reforms that promote defense cooperation with our allies and partners should be complementary to these other export control efforts, not mutually exclusive.

Regulatory authorization to implement a program licensing framework already exists. The proposed reforms to Category VIII, in particular, will be greatly enhanced by the cost and supply chain efficiencies that would result from a program licensing scheme for priority joint military aircraft development programs, such as the F-35 Lightning II. In addition, the commercial benefits would extend far beyond prime defense contractors to hundreds of aircraft parts and component suppliers.

Coupled with control list reform, implementation of a successful program licensing framework would increase the efficiency, predictability, and transparency of the U.S. export control system, and result in the systematic and comprehensive reform envisioned by the President.

II. SPECIFIC RECOMMENDED CHANGES TO THE PROPOSED RULES

In addition, Lockheed Martin has identified several potential issues with the proposed rules, and therefore recommends the following changes to increase their effectiveness and requests clarification on several critical definitions and issues. Lockheed Martin requests that the Departments of State and Commerce pay particular attention to addressing the issues discussed below to ensure that a new licensing framework improves the current system or – at a minimum – maintains the status quo. Regulatory changes that have the unintended result of being more onerous than current requirements are not beneficial for U.S. national security or economic interests and will not further the stated objectives of comprehensive Export Control Reform.

A. ITAR License Exemptions v. EAR License Exceptions

Lockheed Martin appreciates that the Administration's export control reform efforts are not intended to result in an increase in licensing requirements or a decrease in the flexibility afforded to the exporter in connection with proposed transfers of formerly-ITAR-controlled items to the CCL. As stated in the Notice of Proposed Rulemaking, "BIS believes that . . . restrictions on items currently on the USML would be reduced." 76 Fed. Reg. 68680. However, in certain instances, the transfer of certain Lockheed Martin parts and components from the USML to the CCL may increase restrictions on these items by eliminating license exemptions available under the ITAR without creating corresponding equivalent license exceptions available under the EAR.

1. Foreign Military Sales (FMS)

Most significant, the process for exporting parts and components under the Foreign Military Sales ("FMS") program would be significantly altered after the transfer of such parts and components to CCL jurisdiction. Currently ITAR 126.6(c) allows for the transfer without a license of defense articles, technical data, and defense services sold, leased or loaned by the Department of Defense to a foreign country under FMS, provided that specific requirements are met and that transfers of defense articles and technical data are made by authorized freight forwarders. If certain Lockheed Martin parts and components are controlled under the CCL rather than the ITAR, this license exemption does not appear to remain applicable, because under

the current CCL, an ITAR exemption could not serve as authorization to export a CCL item that would otherwise require a license.

There is no comparable FMS license exception available under the EAR. While STA might be available in certain circumstances, in other instances, it would appear that specific licensing would be required. For instance, Lockheed Martin sends many parts and components to destinations outside the STA-36 countries. If specific licensing would be required, it is not clear whether the Department of Defense would request the authorization to permit such exports or whether the manufacturer or prime contractor would need to apply for the license. Further, if the specific parts and components are transferred from the ITAR to the CCL, it is unclear how services related to these articles would be treated under the ITAR, and whether the license exemption available in ITAR 126.6(c) still would apply. As shown below, we suggest clarifying how FMS authorizations will operate following the transfer of parts and components for military aircraft to the CCL, either through the suggestion following the chart below or otherwise.

2. Other ITAR Exemptions

There are several other license exemptions currently available under the ITAR that do not have direct equivalents under the EAR. We have included a chart of several comparisons, but highlight some of the most significant ones here:

First, there is an exemption for temporary imports and subsequent exports for overhaul, repair, and other services (ITAR 123.4(a)(1) and (a)(2)). Numerous Lockheed Martin business units currently use these exemptions hundreds of times each year for testing and repair of aircraft parts and components. For example, when parts and components related to the Lockheed Martin C-130 aircraft system produced in the United Kingdom fail, they are sent to the United States for testing to determine the reason for such failure. After testing, the part or component would be either repaired or replaced and returned to the United Kingdom. Similar testing, repair, and replacement is conducted on parts and components for other Lockheed Martin aircraft sold worldwide.

After specific parts and components are transferred from the ITAR to the CCL, this exemption will no longer be available. While license exception RPL under the CCL will be available, RPL differs from the ITAR exemption in key ways. ITAR 123.4(a)(1) allows the exporter to temporarily import and subsequently reexport defense articles for inspection, testing, calibration, and repair, including overhaul, reconditioning, and one-to-one replacement of defective items, and 123.4(a)(2) allows items to be enhanced, upgraded, or incorporated into another item which has already been authorized for permanent export. License exception RPL, by contrast, allows only the export and reexport without a license of one-for-one replacement parts and the service and repair of parts and equipment; RPL restricts any change to the functionality of an item.[1] In light of the frequency with which Lockheed Martin business units make use of this exemption

[1] See Section 740.10(a)(2)(i) ("Items that improve or change the basic design characteristics, e.g. as to accuracy, capability, performance or productivity, of the equipment upon which they are installed, are not deemed to be replacement parts."); 740.10(b) ("[t]he servicing shall not have improved or changed the basic characteristics, e.g. as to accuracy, capability, performance, or productivity or the commodity or software as originally authorized for export or reexport.")

and the instances where items may need to be upgraded or enhanced after testing in the United States, obtaining individual licenses from BIS for each part and component returned to the United States for testing and subsequently reexported would constitute a significant additional licensing burden.

Second, there is an exemption for export of data on basic operations, maintenance, and training (ITAR 125.4(b)(5)). Lockheed Martin uses this license exemption to export technical data in the form of basic operations, maintenance, and training information relating to a defense article lawfully exported or authorized for export when sending updates and revisions to operations manuals for its lawfully-exported hardware. For example, Lockheed Martin frequently updates its maintenance procedures for flight line personnel; changes are not made on any particular schedule, but are driven by "lessons learned" or the need to change basic inspection, test, and repair procedures in support of new system upgrades. While license exception TSU would operate in a similar manner, and is available for 600-series technology, it is unclear whether TSU would include "training" information to the full extent of the ITAR exemption, as it references "the minimum technology necessary for the installation, operation, maintenance (checking), and repair", without mentioning "training." STA would be available in more limited circumstances, where the export is to an STA-36 country and the ultimate end-user is an STA-36 government or government entity. To the extent that TSU does not fully cover activities allowed under the current ITAR exemption, it appears that a license would be required for activities that do not qualify for license exception STA. Any reduction in the applicability of this exemption to these activities would place a significant licensing burden on Lockheed Martin.

Third, there is an exemption under Section 126.4(c) authorizing exports of defense articles for end-use by a U.S. government agency abroad, under specific criteria. License Exception GOV (Section 740.11) provides similar authority. However, it apparently is more limited, authorizing only exports directly to U.S. government (and certain foreign government) agencies ("personnel and agencies of the U.S. Government or agencies of cooperating governments"). Lockheed Martin makes significant use of the ITAR exemption to send defense articles to non-government entities abroad, for end-use by a U.S. government agency. For example, to export a component of a flight critical avionics system to an authorized contractor in a foreign country to repair/install on a U.S. Air Force F-16 stranded and hard down until the repair can be affected. To the extent that GOV is more limited, this would require Lockheed Martin to seek licenses, delaying the execution of important U.S. government programs.

Exemptions/exceptions authorities – Summary:

EAR Exceptions (Commerce)	ITAR Exemptions (State)	Issues
N/A	126.6 - FMS	Concern that 600 series parts and components will no longer be eligible for the FMS exemption, and that designated FMS freight forwarders will now have to apply for licenses for countries outside of STA-36.
RPL	123.4(a) – US Repair/Return	RPL authorizes the export and reexport of one-for-one replacement parts for previously exported equipment and for servicing and replacement of those parts. Excluded from the definition of replacement parts and "servicing and

		replacement" under RPL are items that improve or change basic design characteristics (e.g. accuracy, capability, performance, or productivity) of the equipment into which they are installed. ITAR exemption 123.4 does not require strict one-for-one replacement and allows for items to be enhanced or upgraded.
STA	123.9(e) - NATO exemption	STA may not be available for shipments to NATO entities as it is unclear whether these are government agencies of the STA countries.
TSU	125.4(b)(5) – Basic Operations and Maintenance Training.	TSU permits "operation and maintenance" technology, while the ITAR exemption also permits basic training. Potential increase in the number of licenses required for basic training.
TMP	ITAR 125.4(b)(7) / Data Returned to the Original Source of Import	The ITAR exemption authorizes the return of defense technical data temporarily imported into the United States. TMP, by contrast, applies to "exports of items temporarily in the United States," it apparently is not available for 600-series technology; in any event it is unclear that TMP generally authorizes the return of technology to the original source of import (e.g., if the technology is not "in transit").
GOV	126.4 – Exports on Behalf of USG	Concern that 600 series items will now require a license if exported to a non-government person for end-use by a U.S. Government agency, outside STA-36 destinations.

- Proposed Solution: Lockheed Martin understands that the Administration plans to address exemption/exception issues in a transitional regulation to be proposed early in 2012. Pending the creation or amendment of exceptions in the EAR to parallel all ITAR exemptions, one viable approach would be for BIS to create a License Exception authorizing the use of ITAR exemptions (e.g., 126.6(c)) to authorize the export of 600-series CCL parts and components of ITAR defense articles (i.e., end-items and systems). This approach would maintain the status quo and preserve the flexibility currently available to industry and would avoid the imposition of unnecessary licensing requirements that would burden the U.S. Government and industry. Moreover, it would support the Administration's intention to facilitate the ultimate integration of the dual-use control system with the defense exports control system, a key component of the ongoing Export Control Reform initiative.

B. Definitions

1. Specially Designed

Lockheed Martin understands that the definition for "specially designed" is still being discussed within the U.S. Government. For purposes of these comments, the definition previously published in FRN #1400-AC77 (December 2010) was used. This definition is a critical element of these proposed controls, lacks clarity, and is potentially still subject to change. Accordingly, it is not possible to assess the full impact of the proposed controls.

- Proposed Solution: Lockheed Martin recommends that the U.S. Government adopt the Defense Trade Advisory Group (DTAG) definition of "specially designed," as proposed at the 3 May 2011 Plenary session, which provides the necessary clarity. (See http://www.pmddtc.state.gov/dtag/documents/plenary_ May2011_SpeciallyDesigned.ppt)

2. Aircraft

Having multiple definitions of aircraft adds unnecessary complexity to Category VIII. See §121.1 VIII(a) and §121.3(a). Although §121.3 is presented as an explanatory reference, it is essentially a definition which must be considered when determining if an item is controlled in §121.1 VIII(a). Furthermore, inclusion of "mission systems" as a discriminator at (121.1 VIII(a)(11) will result in the control of commercial aircraft which have a single system incorporated into the aircraft (e.g., military radio.) These mission systems remain controlled separately on the USML, including when incorporated into a commercial aircraft (i.e., the "see through rule"). It is unclear why their incorporation into a commercial aircraft should warrant subjecting the entire aircraft to control under the USML.

- Proposed Solution: Lockheed Martin recommends that §121.3(a) be incorporated within §121.1 VIII(a) and that §121.3(b) be shown as a reference note since it is not actually a control. §121.1 VIII(a)(11) and §121.3(a)(6) should be deleted, as it results in duplication of controls in other categories.

3. Developmental aircraft

Proposed §121.1 VIII(f) essentially controls all aircraft, civil and military, being developed under a DoD contract, including their parts and components. This could include upgrades and derivatives of previously fielded aircraft if any portion of the development was supported with DoD funding. Therefore, an upgrade could mean that jurisdiction over particular military aircraft and/or parts and components, transferred to the CCL under the Export Control Reform initiative, would move back to the USML. Using a U.S. DoD contract as the only criteria for control leaves exporters in a position of determining what is a developmental aircraft. For example, what if the DoD is only providing minimal funding for testing and/or qualification purposes, or what if it is internally funded or funded by a third party other than the DoD?

- Proposed Solution: Suggested revision of §121.1 VIII(f) in addition to retention of the current note in Category VIII after sub-item (f) with respect to developmental aircraft:

> (f) Developmental aircraft and United States technology demonstrators and "specially designed" parts, components, accessories, and attachments therefore. This includes aircraft designated by the Department of Defense as "X", which are being developed principally with either United States Department of Defense or foreign Ministries of Defense funding to demonstrate and/or validate new technologies or improvements to current technology with specific applicability to defense articles.

4. Parts and Components Specially Designed for Certain Stealth Aircraft

Proposed §121.1 VIII(h)(1) controls parts/components that are "specially designed" for specific aircraft models, in addition to USG "technology demonstrators."[2] Lockheed Martin understands that the proposal seeks to control all parts/components of stealth-type aircraft by identifying the aircraft models rather than the parts/components of concern. For the F-35 Lightning II aircraft, all specially designed parts and components would be controlled under the USML, regardless of the level of technology, whereas similar parts/components for other aircraft, such as the F-16 Fighting Falcon aircraft, would be subject to the CCL. There is a concern that this proposal would impose overly-broad controls on many non-sensitive items developed for the F-35 Lightning II aircraft, adversely affecting this important joint U.S.-allied program. We urge the Administration to seek to narrow this proposal in order to avoid controlling non-sensitive items. We have suggested language below.

- Proposed Solution: Suggested revision:

> (h) Components, parts, accessories, attachments, and associated equipment directly related to commodities controlled by §121.1 VIII (a), as follows: (1) Components, parts, accessories, and attachments "specially designed" to reduce observability of aircraft enumerated in (a)(1) thru (a)(12) of this section (including developmental aircraft and/or United States Government technology demonstrators) using features or methods not in the public domain (§120.11). Items and features that reduce observability of the aircraft only through plan form alignment, unless listed below, are subject to the jurisdiction of the Export Administration Regulations. Observability reduction (aka signature reduction) includes any part of the spectrum (e.g., radio frequency, infrared, electro-optical, visual, ultraviolet, acoustic and magnetic).

5. Classified parts and components

Regarding §121.1 VIII (h)(19), the intent of the control is clear, but controls on sub-items (iii – manufactured using classified production data) and (iv – being developed using classified information) are problematic. Exporters, other than the original equipment manufacturer, will likely not know if either of these conditions apply if the end item part or component is unclassified. For example, the original design of an item may be based on a classified requirement, but that does not necessarily make the end item classified.

- Proposed Solution: Revise §121.1 VIII(h)(19) by deleting (iii) and (iv).

6. Build to Print

The proposed Commerce definition for "Build-to-Print technology" (see proposed 772.1) is potentially ambiguous and could limit the release of complete data packages. The definition

[2] The concerns with respect to technology demonstrators are the same as the concerns discussed above relative to "developmental aircraft".

needs to remove any degree of ambiguity to provide the exporter with a clear understanding of what is permissible and what is not.

- Proposed Solution: "Build-to-Print Technology" is "production" "technology" that is sufficient for an inherently capable end user to produce or repair a commodity from engineering drawings, specifications, computer models, and quality acceptance, test & inspection criteria. The following information is not within the scope of "build-to-print technology":

  (i) "development" "technology," such as design methodology, engineering analysis, detailed manufacturing or process know-how;

  (ii) the production engineering or process improvement aspect of the "technology;" or

  (iii) assistance from the provider of the technology to produce or repair the commodity, beyond providing clarification or interpretation of the information provided (e.g., drawings, specifications, computer models, and quality acceptance, test, & inspection criteria).

7. Unmanned Aerial Vehicles (UAVs)

The proposed §121.1 VIII (a)(5) control is an inadequate description of the controls due to the lack of definition of unarmed UAVs that are nonetheless considered "military."

- Proposed Solution: Establish a bright line definition such that commercial UAVs are not subject to the controls of the USML. Parameters such as stealth, weapons capability, payload, range, etc., should be considered.

C. Licensing Issues

Lockheed Martin identifies three principal licensing issues: (1) license processing times, (2) reexport / retransfer authorizations, and (3) potential double licensing.

1. License Processing

As the Administration is aware, license processing times for many license applications are longer at BIS than at DDTC. See Department of Commerce, "Proposed Revisions to the Export Administration Regulations (EAR): Control of Items the President Determines No Longer Warrant Control Under the United States Munitions List (USML)", 76 Fed. Reg. 41,958 (July 15, 2011). The Commerce Department stated that: "Pursuant to EO 12981, license decisions under the EAR must be made within 39 calendar days, although the average processing time for BIS in 2011 has been 31 calendar days. For licenses processed by the Department of State, the average processing time has been generally around 17 calendar days." While the Commerce Department also stated that "the U.S. Government intends that after items move from the USML to the CCL, processing times for ''600 series'' items generally would not increase as compared to when such items were on the ITAR," it is uncertain at this time whether the U.S. Government will succeed in achieving this objective.

One particular situation where these disparate licensing times may pose an issue relates to temporary exports. Lockheed Martin frequently uses DSP-73 authorizations for the temporary export of USML parts and components, and these license applications are rapidly processed at DDTC. Once certain parts and components are moved to the CCL, license exception TMP would be available. However, the use of TMP would not reduce the licensing burden to Lockheed Martin.

Under a DSP-73, defense articles can be temporarily exported for a period of four years, while under license exception TMP, the time limit is only one year. Temporary exports made by Lockheed Martin frequently exceed one year. The company estimates that nearly half of the items it has temporarily exported pursuant to a DSP-73 not only exceed a one-year time limit but are extended beyond the initial four-year term of the DSP-73; for example, where Lockheed Martin has licensed a foreign party to build components for its aircraft, the company will provide that foreign party with tooling for use, the production, and testing of the components, which will stay with the foreign party until the production line is terminated (up to ten years). Under the CCL, temporary exports of over one year will require the company to obtain a license from BIS. Given the existing disparities in license processing times, there is a concern that these BIS licenses will take longer to obtain than DSP-73s do currently.

- Proposed Solution: Due to the importance of licensing times to the smooth operation of our programs, Lockheed Martin recommends that the Administration ensure that expedited processing is implemented before jurisdiction over USML parts and components transfers to the CCL. This would involve dedication of the appropriate resources at both BIS and the other agencies which review BIS licenses, establishment of agreed protocols to ensure prompt processing, and validating that these mechanisms work in practice for sample applications.

2. Reexport / retransfer Authorizations

The proposed movement of parts and components to the 600-series could lead to a significant increase in the number of licenses for reexport authorization. For example, reexport of 600 series parts and components that are in support of a foreign maintenance facility for USML controlled items will require Individual Validated Licenses, whether or not the parts and components are STA-eligible, if there is an end user outside of the STA-36. Currently under the ITAR, it is possible to obtain an agreement with broad retransfer authorization. This has allowed US and foreign parties to establish regional maintenance facilities for global sustainment activities, thus reducing aircraft downtime. Platform end users are often from countries that cut across the country groups in Supplement No. 1 to Part 740. The result is that customers outside the STA-36 who previously benefited from a broad single authority under the ITAR may be required to wait for delivery of hardware while individual validated licenses are processed to authorize specific re-exports.

- Proposed Solution: Commerce establishes a policy to issue broad IVLs in support of ITAR Part 124 agreements.

3. Double Licensing

As the Administration has recently acknowledged, it is possible that while only a single ITAR license is currently required for a transaction involving the export of an end-item and related parts and components, both an ITAR and an EAR license may be required when the proposed rules go into effect. For example, the marketing, direct commercial sale, and maintenance of C-130 aircraft (and related systems) to any destination in the world will continue to require Department of State authorization; its parts and components would also require separate authorization(s) from the Department of Commerce, for all countries not eligible for STA-36. The list of current C-130 customer countries outside of STA-36 is extensive and includes several major non-NATO allies and coalition partners. Thus, the proposed rules may result in double licensing for items (e.g., systems under the ITAR and parts under the EAR) that currently may be exported pursuant to a single ITAR license.

- Proposed Solution: Lockheed Martin understands that the Administration will publish a proposed "transition regulation" in early 2012 that will give companies guidance on the transition of their licensing operations for items that move from the USML to the CCL, including authorizations that will simplify the export of parts and components subject to the CCL that are being exported at the same time as an end item still on the USML. We support the Administration's intention to propose a mechanism to avoid imposing a double licensing requirement. For instance, the Administration could authorize ITAR licenses (e.g., DSP-5, DSP-73, etc.) to be used to also authorize the export of CCL items that are parts and components of ITAR defense articles (i.e., end-items and systems), in lieu of obtaining additional licensing from the Department of Commerce. This would reduce the burden on the USG and industry associated with redundant licensing requirements when exporting USML end-items and/or systems, along with associated components and parts.

D. Other Recommended Changes

1. De Minimis

In principle, the inclusion of a de minimis level for non-critical military items transferred to the CCL is a positive step, especially in light of the fact that the current level under the ITAR is 0 percent. However, the 10 percent across-the-board de minimis level for the 9/600 series ECCNs is a concern in that it would add significant complexity for Lockheed Martin's foreign partners.

- Proposed Solution: Lockheed Martin recommends that de minimis for items controlled in the CCL 9/600 series be at the 25 percent level, consistent with the standard de minimis provisions within the EAR, and a 0 percent level should apply only to countries subject to AT licensing, in addition to those identified in the ITAR as §126.1 countries of concern.

2. Section 17(c)

The current note in Category VIII has been omitted from this proposed rule. This omission may be construed by exporters that something has changed with respect to the interpretation of Section 17(c) of the Export Administration Act.

- Proposed Solution: Recommend that the current Category VIII note be included in the new rule.

3. 9B610 – production inspection and test equipment

The proposed ECCN 9B610 regarding test, inspection, and production equipment could be perceived as adding new export controls to both the EAR and ITAR. There are minimal USML controls with respect to these types of equipment. Currently, technical data, including software, is controlled under the ITAR with respect to test, inspection, and production, but generally not the actual equipment. This concern could be addressed with a modification to the 9B610 control statement, by limiting it to the embedded technical data (e.g., software) and eliminating the reference to the USML, thus maintaining the status quo.

- Proposed Solution: Revise the header as follows: "9B610 Test, Inspection, and production "equipment" "specially designed" for the "development" or "production" of commodities enumerated in ECCN 9A610 and having embedded technology that is exclusively or predominately used in the "development" and "production" of the enumerated end item."

CONCLUSION

Thank you for the opportunity to provide comments on the proposed rules. Lockheed Martin remains a strong supporter of comprehensive and balanced export control reform and we look forward to reviewing additional proposed rules that will have a substantial, positive impact on our ability to support U.S. national security programs and international defense trade priorities.

Sincerely,

Gerald Musarra
Vice President
Government and Regulatory Affairs

The Boeing Company
1200 Wilson Blvd
Arlington, VA 22209-1989

December 22, 2011

Mr. Charles Shotwell
Director
Office of Defense Trade Controls Policy
Directorate of Defense Trade Controls
12th Floor, SA-1
2401 "E" Street, N.W.
Washington, D.C. 20522-0112

Re: RIN 1400-AC96
Amendment to the International Traffic in Arms Regulations:
Revision of U.S. Munitions List Category VIII, Aircraft and Related Articles
Federal Register/Vol. 76, No. 215/Monday, November 7, 2011

Dear Mr. Shotwell,

The Boeing Company ("Boeing") appreciates the opportunity to comment on the Directorate of Defense Trade Controls ("DDTC") proposed revision to Category VIII of the United States Munitions List ("USML"), Aircraft and Related Articles, Part 121 of the International Traffic in Arms Regulations ("ITAR"). We believe the changes to the draft regulation we are communicating in this letter are essential if the regulation is to achieve the intended purpose. Absent these changes, we would have reservations on the rule and would request the Department conduct further consultations with industry before publishing a final rule.

The benefits that industry would receive from a more positive Category VIII in terms of reduced ITAR licenses and an improved competitive posture in the international marketplace, in particular for suppliers of aircraft parts and components both in and outside of the U.S., could be both immediate and significant, given that such large portion of the licenses issued by your office fall under this Category.

Under this Proposed Rule ("PR"), all current Boeing military aircraft platforms would remain on the USML. We look forward to seeing many parts and components of our military aircraft move from the USML to the Commerce Munitions List ("CML") under a Final Rule. However, licensing treatment of these former Category VIII items once they become subject to the Export Administration Regulations ("EAR"), will be critical in determining if there will be a true benefit of these transfers for companies such as Boeing during the implementation of Phase II of the export reform process. Specific comments and concerns in this area are also

included in our companion response to the Commerce Department's proposed rule issued concurrently with this rule which would revise the Commerce Control List ("CCL") and the EAR to accommodate Category VIII items moving from the USML. Boeing's letter to Commerce is attached (Attachment "A").

Within this framework, we offer the following general and specific comments:

General

- While we support this reform effort, Boeing is concerned overall with the significant increase in regulatory complexity that defense exporters will face once items removed from the USML are transferred to the CML. In addition to the USML and the CCL, the creation of the CML represents, in many instances, a third control list and a third set of rules with which U.S. industry must comply. The differing sets of rules under License Exception STA that apply to end-items, parts/components, and software/technical data for the production/development of STA-eligible products represent just one example of this complexity.

- The definition of "specially designed" has not yet been finalized, yet it is an essential element of controls both in the ITAR and EAR rules. As a result, in the scope of our analysis, it has been difficult to apply the new controls to specific export scenarios or to fully understand the implications of the changes, both for items listed in Category VIII and for those that would be transferred to Commerce. The goal should be a definition that is sufficiently simple and clear that can be easily applied to the ITAR and the EAR alike, by U.S. and non-U.S. users. In this regard, we recommend that State and Commerce withhold publication of USML re-write final rule until industry has the opportunity to comment on the revised new definition that we understand the Commerce Department plans to publish in proposed rule form in the coming weeks.

- It is premature at this point in the reform process to remove the "Note" to paragraph (h) of Category VIII which clarifies the State Department's interpretation of Section 17(c) of the Export Administration Act, particularly since the Act is currently expired and several of the proposed export reform changes are related. We recommend that your office wait until all the changes are fully implemented and understood before the Note is removed.

Specific Comments

- Controls on Parts and Components of Select Listed Platforms - Paragraph (h)(1) controls all "specially designed" parts and components of a number of identified aircraft platforms, the common denominator of which appears to be their Low Observable ("LO") capabilities. Keeping in mind that we do not yet have a final definition of "specially designed," it is our strong view that this provision should

only control parts and components that are *directly related* to the LO functionality of the aircraft--without calling out platforms—rather than all parts and components that may have been designed for a particular LO platform, but have the same function that they perform in other types of aircraft.

We understand that the Administration endeavored to list all parts and components that are "specially designed" for LO, and that this effort resulted in an unworkably long list of items. Creating a list of every part or component that had been modified in any way for an LO application is contrary to the Administration's goal to focus future controls on items that truly matter to U.S. national security. Additionally, such a list would be unlikely to withstand scrutiny under the Administration's new definition of "specially designed" that will focus on those items that *directly support* the unique functionality of an end-item.

Boeing contends that the "catch all" in (h)(1) would create problems because different controls on equivalent parts for similar platforms (i.e. fighters), could lead to confusion for industry, and more compliance risk. While it is possible that the proposed rule issued by DDTC last year to allow an exemption for the export of parts and components would to some extent address such concerns, that rule has not become final and, further, it only allows use of the exemption for the export of replacement parts.

Recommendation: We propose the language in Paragraph (h)(1) be replaced by the following revised language:

(h)(1) Components, parts, accessories and attachments "specially designed" to reduce observability of aircraft enumerated in (a)(1) through (a)(12) of this section (including developmental aircraft and/or United States Government technology demonstrators) using features or methods not already in the public domain (§120.11). Items that reduce observability of the aircraft only through plan form alignment, unless listed below, are subject to the jurisdiction of the Export Administration Regulations. Observability reduction (aka signature reduction) includes any part of the electro-magnetic spectrum (e.g., radio frequency, infrared, electro-optical, visual, ultraviolet, acoustic and magnetic.)

- Listed Items Under Paragraphs (h)(2) Through (19) –A number of the critical mission systems listed in 121.1 are not exclusively military systems. Military mission critical subsystems that are subject to control should have military function. Many of the systems listed in the proposed category VIII text are used in commercial aircraft and therefore such systems are not inherently military. It is proposed that the critical systems listing be limited to systems having military function or that military-specific parameters and control thresholds be applied.

- (h)(2) Gear box technology: There is considerable work under way within the commercial aviation sector to develop technologies for high performance gear box applications. Many commercial aircraft employ gear boxes as part of the drive systems for pumps and generators. Variable speed gear boxes are of particular interest.

- (h)(4) Wing folding systems: A wing folding system was developed, tested full scale, and offered for sale on the 777-200 (Service entry – 1995). Although no customers have elected to purchase the folding system, it remains under offer to Boeing customers

- (h)(7) Damage and failure adaptive flight control systems: Due to requirements for passenger aircraft reliability and robustness, the flight control systems of commercial airplanes are designed with redundancy, fault detection, and fault management. Commercial aircraft flight control systems are designed such that failures of structural components, control systems or avionics are detectable and algorithms are contained in the flight control system to compensate for failures or data inconsistencies. As such they need to be, and are, robust in design and operation. The Commerce Department's Transportation Technical Advisory Committee (TransTAC) has been working to establish definitions for fault tolerant flight control systems and the proposed definition appears consistent with the that group's definition of "fault tolerant" as opposed to "adaptive." We recommend that definitions in the USML be aligned with those being worked by the TransTAC Flight Controls Working Group.

- (h)(13) 28 Volt Lithium batteries: Boeing Commercial Airplanes has very serious concerns regarding the inclusion of 28 volt lithium ion batteries on the list of critical military systems. 28 volt systems are ubiquitous in modern commercial aircraft.

- (h)(15) Helmet mounted display - To enhance pilot situational awareness, head-worn displays are under development for use in commercial aircraft. To improve safety of commercial flight, these systems will incorporate technologies such as night vision and synthetic vision (images of invisible objects or weather projected onto the head-worn display). Although these are not "helmet mounted displays" in the military sense of that term, the technologies employed will be very similar to some military capabilities. Boeing suggests the USML listing identify the specific military attributes of helmet mounted display systems in order to ensure commercial systems will not be inadvertently interpreted as subject to the USML.

- (h)(16) Computers: As currently written, "mission computers, vehicle management computers, and integrated core processors" could all be interpreted to be items found on commercial transport aircraft and are therefore not inherently military in nature. Here again, Boeing recommends that definitions should be established and aligned with the TransTAC Flight Control Working Group definitions.

- (h)(17) Radomes: Because of the drive for increased pilot/controller awareness, increasingly advanced sensing systems are under development for commercial aircraft. For example, two types of radar may be incorporated behind the same radome and may operate at very different frequencies – one to detect weather, the other to sense proximity of other aircraft or ground objects. In this case, the radome would be optimized for compatibility with non-adjacent radar frequencies, meeting the definition at (h)(17). These are important Safety of Flight enhancements in the commercial environment and should not be inadvertently captured in this regulatory language. There is not, however, a commercial requirement for thermal shock or overpressures at the thresholds specified. Thus, we believe that a simple drafting error in the regulation may have occurred. Instead of "or," we believe the two concepts should be connected by "and," as follows:

  *(17) Radomes "specially designed" for operation in multiple or nonadjacent radar bands **AND** designed to withstand a combined thermal shock greater than 4.184 x 10^6 J/m^2 accompanied by a peak overpressure of greater than 50 kPa;*

- Part 121.3: Definition of "Aircraft"– We believe that the control parameters included in the definition of aircraft in Part 121.3 should be moved to the items listed for control within Category VIII, so that exporters would not have to consult two separate ITAR entries to determine level of control. Therefore, a definition of "aircraft" may not be necessary, since the controls would be called out in the USML itself. However, if deemed necessary, we would recommend a streamlined definition, as proposed below, that would apply both for the USML and the Commerce Military List:

  "Military aircraft" are aircraft that are specially designed for a military exclusive use.

  Note: Military aircraft controlled under the Arms Export Control Act are found in U.S. Munitions List Category VIII. Military aircraft controlled under the Export Administration Act are found in Commerce Military List Category 9A610.

We also note that quotation marks are missing in the reference to *mission systems* at VIII(11) that would appropriately tie that entry to the definition provided at 121.3(6.) However, this is an example of the increase in complexity posed by this regulation. For an exporter to understand mission systems and whether or not they are subject to control, it would be necessary to refer to three separate sections of the ITAR: VIII(11), 121.3(6) and 121.8(g.)

- Part 121.3(a)(1)(4): Strategic Airlift Aircraft - We note that the proposed definition of Aircraft in 121.3(a)(1) does not include military aircraft with the "C" (Cargo) designation and concur that cargo aircraft should not be subject to control under the USML. However, cargo aircraft with specific "strategic airlift" capabilities set forth in (a)(4) of this section are proposed for continued USML control. We believe that these aircraft are more appropriately controlled on the CML when they do not include systems controlled on the USML, such as the capability for air-to-air refueling. Control on the CML would continue the requirement to obtain licenses for the export of such aircraft.

  As to performance criteria for strategic airlift aircraft, the capability to land into unimproved or short airfields in aircraft capable of airlifting payloads over 35,000 lbs to ranges over 2,000 nm is not unique to military aircraft and in our view should not be considered a feature exclusive to strategic airlift aircraft. For example:

  - Boeing 737-100 and 727-200 aircraft currently in commercial service fly at unimproved gravel airfields in Northern Canada, Alaska and other locations around the world.

  - There are approximately 200 737 commercial aircraft that currently have short runway capability. These aircraft allow operators to fly increased payload in and out of airports with runways less than 5,000 feet long (standard runways are between 7,500 and 10,000 feet.) These aircraft can land at the Santos Dumont airstrip in Rio de Janeiro, which is only 4,300 feet long.

  Further, including these control parameters in section 121.3 instead of within the text of Category VIII under section 121.1 requires exporters to consult two separate areas within the regulations, unnecessarily increasing complexity and the possibility of compliance issues for exporters.

- Definition of "Specially Designed" – In the introductory comments of the proposed rule, a draft definition of "specially designed" is provided:

  "For the purposes of this Subchapter, the term "specially designed" means that the end-item, equipment, accessory, attachment, system component, or part

(see ITAR § 121.8) has properties that (i) distinguish it for certain predetermined purposes, (ii) are directly related to the functioning of a defense article, and (iii) are used exclusively or predominantly in or with a defense article identified on the USML."

As we noted on page one of this letter, because this definition has not been finalized, we are not able to analyze the impact of the definition on the control parameters and its application to Boeing's businesses. In addition, we believe that the reference to "predetermined purposes" within the draft definition is vague; it may be helpful to refer to *predetermined military functions* if using that characterization. More generally, we believe that the definition should focus on changes that directly relate to the *uniquely military functionality* of the defense article and focus on controlled capability, with form or fit being irrelevant.

In the interests of consonance and predictability, the definition of "specially designed" should be common to both the ITAR and the EAR. We include the definition that we originally proposed to the Department of commerce in Boeing's September 15, 2011 response to their proposed rule issued on June 15, 2011, which we reiterate here for consideration:

> ***(a) A 'specially designed' item, other than a 'part' or 'component', is an item that is enumerated on the CCL and USML and, as a result of 'development', has properties peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics, or functions of the referenced item identified in the CCL.***
>
> ***(b) A 'specially designed' 'part' or 'component' is one that is specific to an end item enumerated on the CCL, and, as a result of 'development,' has properties peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics, or functions of the specified end item identified in the CCL.***
>
> ***(c) An item is not considered 'specially designed' if it is used in an end-item in 'serial production' that is not enumerated on the USML or CCL (i.e., the item is EAR99 or AT-only controlled), and the item's form, fit, and function have not been altered for use in another end item enumerated on the USML or CCL after 'serial production' of the non-enumerated item has begun.***

- Controls on Unmanned Aerial Vehicles (UAVs) – The new Category VIII listing broadly identifies two types of UAVs: "unarmed military unmanned aerial vehicles" (a)(5), and "armed unmanned aerial vehicles" (a)(6). Additional definition is needed to establish a true positive control list, since the UAV sector has rapidly become more varied and sophisticated, and we expect this trend to

continue. Control parameters adopted under this rule should anticipate, as much as possible, near-term product development activities within the UAV market. Characteristics could be identified that would allow sufficient differentiation to clearly identify the types of UAVs that should remain on the USML. Once those characteristics are articulated, UAVs that do not meet those thresholds and are considered less sensitive from a critical military capability perspective could be clearly understood to be subject to controls under the CML. UAVs with a purely commercial application could move to Category 9 of the Commerce Control List as it exists today. We base these comments on the following premises:

- UAVs are controlled by a pilot/operator from a ground control station and not by a pilot on board the aircraft.

- UAVs, if programmed appropriately, can be rendered inoperable when flight control software and hardware are modified after delivery to the end user.

- Software loads could in effect be designed, for example, for a commercial mission specification, and any altering or tampering with the "software box" would disable it.

- Mission specifications or geospatial coordinates and parameters would also assure that the vehicle would not launch if manufacturer specifications were not validated/authenticated in the pre-flight autonomous system check.

- Mission specifications could be designed to meet varied programmable altitude and range envelopes. Should changes to the flight envelope or equipment configuration be desired, a change order to the manufacturer for a software load and weight and balance change would be necessary.

There is a significant international market for UAVs intended for civil applications. While this market is still in early development, UAVs are regularly being considered for border/shore patrol, civil disaster surveillance, drug enforcement and film/televisions uses. In light of the importance of U.S. competitiveness to the strength of the U.S. industrial base, a re-write of Category VIII and a brighter line between the ITAR and the CCL that better reflects the state of the technology today and in the near future, as opposed to what existed in the area of UAVs when the *Missile Technology Control Regime* was established, is necessary.

Further, from our perspective not all UAVs controlled under the USML should be designated as Significant Military Equipment ("SME"). Only those UAVs that provide stealth, target acquisition, launch and delivery systems for weapons, and flight control and vehicle management systems with intelligence controls and autonomous behavior technologies should have the SME designation. In our view, UAVs that provide only intelligence reconnaissance or surveillance capability should not be categorized as SME.

With this in mind, we propose deleting the current paragraphs (a)(5) and (a)(6) of Category VIII in the proposed language and replacing it with a new (a)(5) as follows:

(a)(5) Unmanned aerial vehicles (UAVs) as follows:

(i) *Armed and unarmed UAVs that have been specifically designed for military application and include stealth, , and target acquisition military technology, launch and delivery systems for military weapons, or flight control and vehicle management systems with intelligence controls and autonomous behavior technologies (i.e., UAVs that interact with each other to avoid collisions and can operate in clusters, have swarming capability or, if weaponized, are able to coordinate targeting.)

(ii) Armed and unarmed UAVs that have been specifically designed for military application and include intelligence reconnaissance or surveillance capability.

(iii) Command and control systems specifically designed for UAV systems under this section.

In addition, we propose the language below for ECCN 9610 of the Commerce Military List in the hope that it will assist in determining a jurisdictional "bright line" for UAV jurisdiction.

9A610 – Military Aircraft and Related Commodities

1. ***Unarmed "specially designed" military unmanned aerial vehicles with a range equal to or greater than 300km but not able to carry a 500kg or greater payload***
2. ***No stealth capability***
3. ***Limited to the following uses: intelligence, surveillance and reconnaissance, atmospheric research and weather forecasting, search and rescue, coastal and border patrol, communications relay, and graphic detail terrain mapping.***

For purposes of this ECCN, "payload" excludes any the following:

a. Munitions of any type, including explosive and non-explosive;

b. ***Mechanisms and devices for safing, arming, fuzing or firing;***
c. ***Countermeasures equipment (e.g., decoys, jammers or chaff dispensers) that can be removed without violating the structural integrity of the vehicle;***
d. ***Munitions supporting structures or deployment mechanisms that can be removed without violating the structural integrity of the vehicle***

4. ***Launch, recovery and command and control station equipment specifically designed as part of UAV systems controls under this ECCN.***

Note: UAVs listed above must include (1) GPS limitation of geographic region capability; (2) hardware and software systems security and safeguards to prevent end-user modification; (3) no end-user payload interchange capability.

The Commerce Control List as currently written contains two ECCNs related to UAVs under Category 9, Propulsion Systems, Space Vehicles and Related Equipment: 9A012 and 9A120. UAVs not meeting the criteria that Boeing proposes under Category VIII and Category 9 within the 600 Series should fall under one of these ECCNs, as appropriate. Additionally, we recommend these ECCNs include launch, recovery and command and control station equipment specifically designed for the UAV system identified under each ECCN.

We also recommend that before issuing final rules for USML Category VIII and CCL Category 9 State, Commerce and DOD organize a working session with manufacturers of UAVs, so that stakeholder engineering and export controls personnel participate in an in-depth discussion of jurisdiction and control parameters as applied to this dynamic, growing and increasingly important aerospace sector. The U.S.-UK Defense Trade Cooperation Treaty "Pathfinder" pilot program working sessions recently conducted by DOD, DOS, other stakeholder agencies, and affected companies are a strong example of USG-industry collaboration in the area of export controls. We firmly believe that a similar collaborative effort on UAVs would provide critical insight for all parties.

In closing, we reiterate that the changes suggested in this letter are essential and, without them, we would have reservations with respect to the overall value of the rule. We also want to continue to emphasize the need to articulate a transition period, involving a phased implementation over the course of a calendar year, that will ensure that the new rules are properly implemented, that exporters are protected from unintended errors, and that compliance risks do not increase as a result of the changes. We expect implementation costs associated with training, systems changes and re-marking of products to be significant. From our perspective, the USG should establish mechanisms, such as a pilot program, regularly scheduled meetings with industry, a dedicated office for exporter inquiries, *etc.*, to mitigate the implementation impact of these changes, particularly on small and medium size enterprises. Finally, we respectfully reiterate our request that the regulations be published as an Interim Rule.

Please do not hesitate to call me should you have any questions or desire additional information. You can reach me by phone at 703-465-3505, or via e-mail at stephanie.a.reuer@boeing.com.

Sincerely,

Stephanie A. Reuer
Director, Global Trade Controls

From: Bump, Mark W. [mailto:mark.bump@timken.com]
Sent: Friday, December 16, 2011 2:39 PM
To: DDTC Response Team
Subject: ITAR Amendments - Category VIII (Aircraft) (RIN 1400-AC96)

Dear Directorate of Defense Trade Controls:

The Timken Company ("Timken"), appreciates the opportunity to provide comments regarding the proposed revision to United States Munitions List Category VIII (Aircraft). The proposed revision appeared in the Federal Register, Vol. 76, No. 215, Monday, November 7, 2011 (the "Proposal").

Timken is an international business, with an expertise in friction management and power transmission. We are headquartered in Canton, Ohio. Our web site is at: www.timken.com. Our most well known product is bearings.

Timken is submitting these comments from the perspective of its business, primarily our bearings, certain of which are currently on the United States Munitions List ("USML"), under Category VIII(h). Timken is a member of NAM, as well as other organizations, and it is our intention to coordinate with those organizations to submit separate comments to you (from such organizations), where such comments are not unique to bearings or to Timken's business.

Overall, we believe the Proposal is a good start. The Proposal does not quite go far enough to completely “level the competitive playing field” for us; however, with some modification, it can be much better than what we have today, under the current ITAR. We believe that with a few key enhancements, the Proposal will not only help us competitively, but would exemplify what former Defense Secretary Gates mentioned in his April 20, 2010 address to the Business Executives for National Security. It would allow DDTC to focus on what is really important from a national security standpoint, and it would remove impediments for NATO partners and our major allies to obtain our bearings, thereby increasing U.S. exports and jobs.

To fully achieve the benefits cited above, we recommend the following enhancements to the Proposal:

1. Definition of “specially designed”.

   We understand that a revised proposed definition of “specially designed” will be published in the near future, and we will provide comments at that time. We believe this definition is critical to the degree of benefit that can be realized. The closer that definition is to the “design intent standard” under the current ITAR, the less beneficial this Proposal is.

We continue to believe that our comment to the Proposed Revision to EAR, Federal Register Vol. 76, No. 136, July 15, 2011 (RIN 0694-AF17), to exclude "gears" from the definition of "specifically designed" is important. The comment involved proposed §772.1, definition of "specially designed", the Note to Exclusion Paragraph Number 1:

> "Threaded fasteners….springs, gears and wire" are identified as representative types of items excluded from the definition of "specially designed"…"

Also, we support the Defense Trade Advisory Group ("DTAG") recommendations regarding the definition of "specially designed", as set forth in the DTAG's USML to CCL FRN Review, Plenary Session, November 9, 2011 slide show (slides #13-22), which is on your web site. While there are many good suggestions, the one we felt would be the most beneficial was on slide #18 (attached), which was a proposed additional exception to the definition of "specially designed", for common components. We believe that adopting these DTAG recommendations will significantly further the President's export reform effort toward its stated goals.

Finally, we believe it may be helpful for small businesses who are aerospace suppliers, if the "Section 17(c)" Note in current USML Category VIII(h), was explicitly added to the exclusions of the definition of "specially designed". We believe that many lower tier aerospace part suppliers, including small businesses, will find it easier to determine that the end item has an FAA civil aircraft type certificate and that the other requirements in the Note are satisfied, and therefore their part or component is not "specially designed".

2. Proposed USML Category VIII(h)(1).

We make bearings for the landing wheels of the stealth aircraft, listed in the proposed USML Category VIII(h)(1). Under the ANPRM definition of "specially designed", we do not believe these bearings would be within USML Category VIII(h)(1), as they do not affect the stealth capabilities of the aircraft, but are only used when taking off or landing, just like a civil aircraft. Most of our landing wheel bearings are used on civil, not military aircraft.

However, since the definition of "specially designed" is not yet finalized, we recommend that the Proposal be modified to specifically exclude bearings for landing wheels on the aircraft cited (B1B, B-2, F-15SE, F/A18E/F/G, F-22, F-35 (and variants thereof) and F-117, as well as foreign equivalents. Our recommended language would be as follows:

> Insert the following parenthetical in the first sentence to VIII(h)(1) as follows: "Components, parts, accessories, attachments, and equipment

(except bearings used in aircraft landing wheels, which are subject to the jurisdiction of the Export Administration Regulations) “specially designed”….”

Please do not hesitate to contact us with any questions.

Respectfully submitted,

Mark Bump
The Timken Company
Mgr - Global Trade & Compliance
Customs Attorney
330-471-3949
GNE-12

Answer—Question 3 Continued

Opportunities to improve the preciseness of the definition include:

- Adding an exclusion for common components that may unintentionally be controlled because the "peculiarly responsible" criteria and the parts multi-use exclusion do not apply.

(d) Items that are not so separately 'enumerated' for purposes of this definition, are also not considered "specially designed" in any category of the CCL if they are:

A "part" or "component" that does not, as a result of "development," have properties peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics, or functions of the referenced item identified in the CCL or USML; and its function is identical to an EAR99 or AT-only controlled part or component.

Note – A function is considered identical if it is designed for the exact same purpose with no additional performance criteria. An example of identical parts would be two 12V DC battery with slightly different dimensions. Examples of batteries with additional performance criteria would be 12 V DC battery with a requirement to operate in a high temperature environment or a 12 V DC battery that must last twice as long as AT-controlled batteries.

Electric Aircraft Development Alliance
Advancing the Development of Electric Flight

December 22, 2011

Directorate of Defense Trade Controls
U.S. Department of State
Harry S. Truman Building
2201 C. Street, NW
Washington, DC 20522-3401

Reference: Comments Regarding the Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII, RIN 1400-AC96; ITAR Amendments-Category VIII, dated November 7, 2011

To Whom It May Concern:

EADA (Electric Aircraft Development Alliance) is an organization supported by an international alliance of electric flight stakeholders – from kit plane manufacturers to multinational corporations to universities. EADA's mission is to advance the development of electric flight by promoting and facilitating the safety, interests and activities of electric aviation.

EADA has collected comments from some of its alliance members regarding the above referenced amendment. This letter summarizes those comments, and includes as attachments portions of the comments received. With respect to these comments, EADA received feedback and participation from the following electric aircraft companies and organizations:

- Alternair
- Beyond Aviation
- Cessna Aircraft Company
- Electric Aircraft Corporation
- Embry Riddle Aeronautical University
- Sikorsky Innovations

EADA opposes adoption of the proposed addition of "[a]ircraft lithium-ion batteries that provide 28 VDC or 270 VDC", subparagraph (h)(13) in the proposed revision of Category VIII, found on page 68697 of the November 7, 2011 Federal Register Notice. EADA provides the following comments in support of its position:

1. Lithium ion batteries are readily available on the international commercial market, and have been for at least 20 years, with a majority of cells manufactured overseas. Any commercially available lithium-ion cells can be arranged into a battery pack with a voltage range of 28VDC or 270VDC and placed in an aviation application. Many lithium-ion batteries used and planned for use in aviation are based on commercial cells.
2. Lithium-ion batteries should not be listed under ITAR control, unless specific models and specific design features unique to the ones serving in military hardware are of concern to the State Department. Many of the actual lithium-ion cell manufacturers are in China and other countries, so restricting them must be tied to some particular unique design feature,

and not to an entire classification of lithium-ion 28V aircraft batteries. Without specific boundaries regarding what characteristics are of concern to the State Department, all lithium -ion batteries used for aviation purposes may be inappropriately associated with ITAR restrictions, limiting their development and use for emerging technologies and applications.

3. Lithium-ion batteries hold the key to potential revolutionary changes in transportation technology, as already demonstrated in hybrid cars, trucks, and rail systems. Also, lithium-based battery technology has already revolutionized the hobby industry, particularly for radio controlled aircraft. Lithium-ion batteries have the same potential to bring revolutionary change to manned electric flight, with significant environmental impact and the potential revitalization of recreational aviation on a global scale. These improvements may not come to fruition with ITAR restrictions on aviation-based lithium battery technology.
4. ITAR restrictions will limit the competitiveness of the US lithium-ion battery manufacturers in the global market, and their potential market share, in a time when global competition is at its peak. Conversely, global market demand is growing at an exponential rate for lithium-ion batteries for use in solid state lighting, electronics, and transportation applications.
5. There are very few batteries, if any, that have exactly 28V or 270V nominal voltage. Battery voltages are typically multiples of the basic cell voltage for specific battery chemistries (i.e. 1.2V for Ni-Cd; varying values from 3.35-4.2V for Li-Ion). Instead, the nominal battery voltages can vary, but are designed to provide power for an aircraft bus with nominal voltages of 28V or 270V. This is in the same voltage range that may be expected for a battery used to power an electric propulsion aircraft.
6. Electronics designed for aviation applications incorporate the same design principles used in commercial lithium-ion battery electronics such as cell balancing, charge current control and protection, overcharge protection, over-discharge protection, over-temperature protection and shut-off. As with commercial electronics, the batteries monitor state of charge and state of health and then report battery health to the device using the battery, albeit a computer laptop, cell phone, or an aircraft.
7. Battery electronics design expertise for aircraft batteries can be obtained from any battery designer that has designed lithium-ion batteries for any industry. The main uniqueness of aviation batteries is the rigorous system safety and certification and configuration control requirements, which can be easily learned. Electronics design is a common capability available globally.
8. There has been history of parts used in aircraft that were originated from other industries. Lead Acid batteries for piston aircraft were originally automotive batteries. Lithium-ion cells being used by at least one general aviation manufacturer are based on cells that have been used in power tool, automotive, and grid power applications.
9. Lithium-ion batteries provide weight savings, better performance, and lower direct operating cost over conventional Ni-Cd and Lead Acid chemistries.
10. The Department of State should view lithium-ion chemistry as an existing commercial technology that has been adapted for niche military applications. It is not a military technology that has been commercialized.

The companies whose comments are incorporated in this letter, as well as other electric aircraft manufacturers, currently use lithium-ion batteries in the development of manned electric aircraft for general aviation and commercial purposes. Their ability to develop, build and market their aircraft would be significantly impacted by the above referenced amendment.

Should you have questions on the comments provided in this letter and its attachments, please do not hesitate to contact me.

Sincerely,

Yolanka Wulff
EADA Program Director
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Attachment: Letter and comments from Sikorsky Innovations

Sikorsky Innovations

6900 Main Street, Stratford, CT 06615

December 19, 2011

To Whom It May Concern:

Sikorsky Innovations, the research and development organization of Sikorsky Aircraft Corporation, appreciates the opportunity to provide feedback to the Department of State on the proposed revisions to Category VIII of the U.S. Munitions List (USML), as outlined in the RIN 1400-AC96 document. As a leader in providing vertical lift solutions to both commercial and military customers, Sikorsky supports the Administration's Export Control Reform Initiative and its goal of strengthening national security and U.S. competitiveness.

Through the effort currently being undertaken with Firefly™, the all-electric technology demonstration helicopter, Sikorsky Innovations has become acutely aware of emerging battery technologies and their impact on current and future commercial products. As such, the following comments are provided against the adoption of the proposed addition of "[a]ircraft lithium-ion batteries that provide 28 VDC or 270 VDC", subparagraph (h)(13) in the proposed revision of Category VIII, found on page 68697 of the November 7, 2011 Federal Register Notice. Based on the global availability of this technology and unfair impact to the aviation industry that would result from the incorporation of this addition, as detailed in the attachment, Sikorsky Innovations believes that subparagraph (h)(13) should be removed from the proposed revision to Category VIII.

Regarding the appropriate 600 series Export Control Classification Number (ECCN), Sikorsky Innovations believes that ECCN 9A610y. provides the proper level of control for the lithium-ion batteries and battery cells themselves. This is supported by the factors which include: (1) militarily, lithium-ion batteries do not appear to provide a critical strategic or tactical advantage, (2) lithium-ion battery cell chemistry between military and civil applications is not materially different, (3) cells, and various cell configurations, are readily available outside the United States, and (4) cell configurations are easily duplicated to create a specific battery. Control of battery cases is a separate matter, and those cases that provide ballistic protection, radiation hardening or some other significant militarily unique feature, should be controlled at a higher level, perhaps using one of the reserved o. through w. paragraphs.

Should you have questions on the comments provided below, please do not hesitate to contact me directly at my office line or via e-mail.

Sincerely,

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Sikorsky Innovations

6900 Main Street, Stratford, CT 06615

Comments in Reference to the Proposed Addition of "[a]ircraft lithium-ion batteries that provide 28 VDC or 270 VDC"

1. **Lithium-ion batteries are easily and readily available, in off-the-shelf configurations, on the international commercial market:** Lithium-ion chemistry has been in use for battery applications for the past two decades. Over that time, international manufacturers have come to dominate the lithium-ion battery production and distribution markets. Manufacturers in countries including China and Korea, while in some cases utilizing domain expertise licensed for the United States, are the principal manufacturers of the batteries utilized in U.S. produced consumer goods. Examples of manufacturers located outside the United States include LG Chem (Korea: http://www.lg.co.kr/index.jsp), Byd Power (China: http://www.byd.com.cn/views/home/indexe.htm), China BAK Battery (China, http://www.bak.com.cn/main.aspx) and GAIA (Germany: http://www.gaia-akku.com/en.html). As a result, these best-in-class batteries are widely and freely available at open market prices to international manufacturers and organizations. The proposed addition to the USML would not restrict these entities from continuing to gain access to lithium-ion technology that meets or exceeds the best-in-class technology available within the United States. Furthermore, by restricting U.S. manufacturers from utilizing this readily available technology in their international products, the proposed addition produces a disadvantage for U.S. manufacturers.

2. **The proposed revision unfairly restricts the aviation industry:** A wide range of industries and products utilize lithium-ion batteries because of their performance advantages over older battery chemistries. It is the chemistry, therein, and not a particular voltage where any competitive/strategic knowledge resides.

   Operating voltage is one of the principal design criteria for any battery. To arrive at a particular voltage, battery cells are combined into battery systems (or 'packs'), which are commonly referred to as a singular 'battery.' The voltage of individual cells in a pack is determined by the physics of a specific chemistry (for lithium-ion chemistries, this is generally in the range of 3.5 VDC to 4.5 VDC). To obtain an operating voltage higher than this basic voltage, cells must simply be combined together. This combining of cells does not require advanced, competitive or sensitive information or skills. To obtain a battery with an operating voltage of 28 VDC or 270 VDC does not, in any way, require skills that would provide a competitive military advantage to the United States.

   Aircraft power systems are one of the only industrial systems to utilize 28 VDC as a standard, primary power voltage. Many of the avionics systems and accessories designed for use on commercial aircraft have been designed to be compliant with 28 VDC input power. With no clearly defined strategic reason as to the specific voltage restriction, it is unclear why the Department of State has chosen the 28 VDC/270VDC measure, the only impact of which it appears is to place an unfair restriction on the use of this technology for the aviation industry alone.

3. **Lithium-ion chemistry is an existing commercial technology that has been applied to military usage:** As with many technologies, lithium-ion batteries were first utilized in commercial products before being adapted to the more rigorous requirements of aviation, and eventually military, applications. Therein, current battery cells made for commercial and military applications do not differ materially in their chemistry. The only difference between products made for the two applications is the level of testing, safety rigor and certification applied to those designed intended for military use. The knowledge needed to convert a battery from commercial product to military applications is easily learned and publically available. The proposed addition, therefore, does not

restrict the ability of international entities from gaining access to lithium-ion technology and applying it to aviation or even military applications. Since the proposed addition does not limit this gain, it unfairly inhibits U.S. manufacturers from competing fairly with international companies without significant strategic benefit. The Department of State should consider lithium-ion battery technology of any operating voltage as an applied commercial technology, instead of a defense-related technology.

4. **The U.S. Government has existing relations with international companies for the sharing of U.S. insight on lithium-ion chemistry:** Any U.S. domain expertise in the area of lithium-ion chemistry has already been shared by the U.S. Government with international organizations. As an example, Argonne National Laboratory, where significant technical developments in lithium-ion chemistry have been produced since the early 1990's, has signed and currently maintains active international partnerships for the distribution of their technical knowledge. Specifically, in June 2009 the Laboratory signed an agreement with BASF for the world-wide production, distribution and marketing of proprietary technology patented by Argonne researchers. Restricting these batteries through use of the USML will not prevent U.S. knowledge from disseminating to international sources, nor prevent international companies or organizations from gaining competitive advantages within this technology relative to U.S. manufacturers.

5. **Restricting battery chemistries and voltages will have a direct, negative impact on the commercial aviation market:** Existing commercial rotorcraft products, including those produced by Sikorsky Aircraft, utilize batteries for functions including emergency power and engine starting. Lithium-ion chemistries provide significant technical benefits over earlier chemistry batteries, including lighter weight, higher performance and lower maintenance/replacement costs. Disallowing the use of the technology on commercial products for international customers places U.S. manufacturers at an unfair disadvantage, given the wide international availability of lithium-ion batteries.

   Future aircraft concepts utilizing all-electric propulsion have the potential to drastically reduce operating costs over similar, fossil fuel powered propulsion systems. Such technical advances have the potential of providing U.S. manufacturers with significant competitive advantages in the international marketplace. Restriction of lithium-ion chemistry batteries would prohibit U.S. manufactured, all-electric propulsion systems from future commercial products, while the technology that would enable foreign competitors is readily available.

6. **If the proposed rule change is accepted, clarification will be required:** If the Department of State does accept the proposed revision, for implementation purposes the aviation industry will require clarification as to the location of the 28 VDC or 270 VDC measurement. Rather than creating 28 VDC batteries, current practice utilizes an array of batteries with a range of operating voltages and converts energy in those batteries into useful power through a power bus or DC to DC converter. If it is the intent of the Department of State to measure this restricted voltage from the power bus/converter, then the proposed revision is inherently restricting *all* lithium-ion technology from use on commercial aircraft, rather than a specific subset. Such a ruling would be excessively onerous, truly imposing a competitive disadvantage on the aviation industry exclusively.

December 22, 2011

Directorate of Defense Trade Controls
U.S. Department of State
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Washington, DC 20522-3401

Reference: Comments Regarding the Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category VIII, RIN 1400-AC96; ITAR Amendments-Category VIII, dated November 7, 2011.

To Whom It May Concern:

EAA (Experimental Aircraft Association) is the world leader in recreational aviation. VAA (Vintage Aircraft Association) is the world leader in the retention and restoration of historical Antique, Classic and Contemporary aircraft. With a combined international membership of 170,000 people in more than 110 nations, EAA and VAA bring together aviation enthusiasts, pilots and aircraft owners who are dedicated to *Sharing the Spirit of Aviation* by promoting the continued growth of aviation, the preservation of its history and a commitment to aviation's future. EAA and VAA programs, activities and events are known throughout the world for *Preserving* the heritage of aviation, *Promoting* access to flight, *Protecting* the right to fly, *Preparing* for the future of aviation, and of our *Passion* for aviation safety and education.

EAA requests the entry for aircraft lithium-ion batteries (§ 121.1, VIII, Aircraft and Related Articles, item (h)(13)) be changed to read:

"(13) Aircraft lithium-ion batteries "specifically designed or modified" for military use that provide 28 VDC or 270 VDC;"

This request is being made for these specific reasons:

1. Lithium-ion batteries have been on the commercial market for at least 20 years;
2. The RTCA SC-225 committee is developing industry standards for Lithium-ion batteries for use in small, medium, and large general aviation and commercial aircraft;
3. As existing technology, Lithium-ion batteries were not designed for military use. It is public sector technology that have been adopted by the military for niche applications;
4. Commercially available Lithium-ion batteries are the key power-source technology source used in the developing private and commercial electric aircraft and automobile industries.

Without implementing the above requested wording change to the ITAR restrictions of 28 VDC or 270 VDC Lithium-ion batteries, the Department of State would cause harm to the broader development of private and commercial electric aircraft both here in the U.S. and abroad.

Sincerely,

Randy Hansen
Government Relations Director

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