January 3, 2013

To: DDTCResponseTeam@state.gov
cc: publiccomments@bis.doc.gov
ISTAC and SensorsTAC

From: William A. Root, waroot23@gmail.com

Subject: Revision of USML Category XI RIN (1400-AD25)

The following comments respond to the subject proposed rule, which appeared in the Federal Register on November 28, 2012.

It is recommended that the following be omitted from Category XI (and from all other USML Categories): "specially designed", specialized, designed, enable, ability to use, ability, able, employ, employing, implementing, capability, capable of, modify, customize, directly related, parts (or part), accessories (or accessory), attachments (or attachment), associated equipment, sets, classified, technical data, and MT (unless MTCR wording is used).

All these terms detract from the stated objectives of a "bright line" between the USML and the CCL and greater interoperability with U.S. allies.

The purpose of the Export Control Reform proposed definition of "specially designed" is to catch all the items now on the USML which would be transferred to the CCL. Therefore, any use of "specially designed" in the revised USML detracts from the desired "bright line" between the USML and the CCL. Other similar expressions (*e.g.*, specialized, designed, enable, ability to use, ability, able, employ, employing, implementing, capability, capable of, modify, customize, directly related), being undefined, would create even more confusion.

The definitive words "single unassembled" in the 121.8(d) definition of "part" also occur in the June 19 (b)(2) release portion of the proposed definition of "specially designed". All of the 121.8(d) examples (rivets, wire, bolts) are included in the (b)(2) release, along with many others. The public has not been informed of any "part" which would warrant control. Wassenaar ML 11 does not control parts.

The 121.8(c) definition of accessories and attachments and associated equipment is "which are not necessary for their (component, end-item or system) operation but which enhance their usefulness or effectiveness." If the enhancement is relevant to the characteristics which warrant export control, such items would be necessary for their operation and should be regarded as components. If not, there is no identified reason to control them. The examples given in 121.8(c) (riflescopes and special paints) are separately controlled on the USML and the CCL. The public has not been informed of any accessory, attachment, or associated equipment which warrants control and is not now already controlled. Wassenaar ML 11 does not control accessories, attachments, or associated equipment.

Inclusion of classified items on an export control list is ineffective, because the characteristics which warrant classification cannot be included in an unclassified document. Classification restrictions, which are applicable to exports as well as to other forms of dissemination, are more effective than export controls.

"Technical data" as used in the existing (and proposed) USML includes both software and all forms of technology, whereas the CCL (and international export control regimes) construe technical data to be a subset of technology.

Labelling a section of the USML as MT is inaccurate unless that section uses language from the MTCR Annex. The following proposed items marked (MT) do not do so: (a)(13) direction finding, (c)(10)(i-vi, viii) radomes, (c)(17) classified, and (d) technical data. The following four proposed items marked (MT) come close to using MTCR language: (a)(3)(xxix) radar and laser radar, (c)(10)(vii) radomes, (c)(14) 125^{o}C, and (c)(15) hybrid computers. But (a)(3)(xxix) overlaps 6A008.j.1 and (c)(14) is covered by 3A001.a.2.a.

The Attachment to these comments contains ~~line-out~~ changes to delete the terms recommended for omission from proposed Category XI. In some instances, non-technical <u>line-in</u> changes are recommended for clarification. In some cases, additional technical detail would be highly desirable as a substitution for "specially designed." Use of "specially designed" on the USML is undesirable because of the risk that an item otherwise clearly controlled might be construed as uncontrolled because of being released from the proposed definition of "specially designed."

The Attachment also identifies several proposed items which overlap items now on the CCL and are now subject to DOC jurisdiction. The Reform is intended to transfer items from the USML to the CCL but not to transfer items from the CCL to the USML. These comments are being copied to the Information Systems and Sensors TACs, so that they might consider how to develop a "bright line" between ITAR and EAR jurisdiction for proposed Category XI items with CCL overlaps. It may be unrealistic to expect that this could be completed prior to the January 28 deadline for public comment on the Category XI proposed rule.

Attachment

Recommended Revisions to Proposed USML Category XI

(a)(1) Underwater hardware, equipment, or systems, as follows:
(i) Active or passive acoustic array sensing systems ... having any of the following:
(A) Multi-aspect ~~capability~~; ...
(B) Operating frequency less than 20 kHz
(Overlaps 6A001.a.1.b.1 and a.1.b.2.)
(D) ~~Capable of~~ real-time processing
(Overlaps 6A001.a.2.c and a.2.f.)
(iv) Acoustic modems, networks, and communications equipment with adaptive compensation or ~~employing~~ Low Probability of Intercept (LPI)
(iv) Note 1 to paragraph (a)(1)(iv): Adaptive compensation ~~is the capability~~ of an underwater modem ~~to assess~~ assesses the water conditions to select the best algorithm to receive and transmit data.
(v) LF/VLF electronic modems, routers, interfaces and communications equipment ~~"specially designed"~~ for submarine communications; or
(Overlaps 5A001.b.1 and 8A002.d.1.)
(vi) Autonomous processing/control systems and equipment ~~that enable~~ for cooperative sensing and engagement by fixed (bottom mounted/seabed) or mobile Autonomous Underwater Vehicles (AUVs).

(a)(3) Radar systems and equipment, as follows: ...
(i) Airborne radar that tracks targets
(Overlaps 6A008.g)
(ii) Synthetic aperture radar (SAR) ...
(Overlaps 6A008.d)
(iii) Inverse synthetic aperture radar (ISAR)
(Overlaps 6A008.d)
(v) Any ocean surface surveillance radar ~~with~~ which either has a product of transmit peak power times antenna gain ... or ~~a capability to distinguish~~ distinguishes a target of ... from sea clutter ...
(xii) Radar incorporating pulsed operation with electronic steering of transmit beam in elevation and azimuth
(Overlaps 6A008.e and .k)
(xvii) ... pulse Doppler processing ...
(Overlaps 6A108.a Note .d)
(xx) Radar ~~employing~~ electronic support (ES) mode(s) ~~(*i.e.*, the ability to use a radar system for ES purposes in one or more of the following~~ ~~As~~ as a high-gain receiver, as a wide-bandwidth receiver, as a multibeam receiver, or as part of a multi-point system~~)~~
(xxi) Radar ~~employing~~ non-cooperative target recognition (NCTR) ~~(*i.e.*, the ability~~ to recognize a specific platform type without cooperative action of the target platform~~)~~
(xxix) Radar and laser radar systems ~~"specially designed" for~~ having characteristics described in

texts in U.S. Munitions List descriptions of the following controlled defense articles ...
(Overlaps 6A008.j)

(a)(4) Electronic combat equipment, as follows: ...

.(ii) Systems and equipment that detect and automatically discriminate acoustic energy emanating from weapons fire ..., determining location or direction of weapons fire in less than two seconds from receipt of event signal, and ~~able to operate~~ operating on-the-move ...

(iii) Systems and equipment ~~"specially designed" to introduce~~ introducing extraneous or erroneous signals into radar, infrared based seekers, electro-optic based seekers, radio communication receivers, navigation receivers, or ~~that~~ otherwise ~~hinder~~ hindering the reception, operation, or effectiveness of adversary electronics ~~(*e.g.*,~~ by active or passive electronic attack, electronic countermeasure, electronic counter-countermeasure ~~equipment~~, jamming, ~~and~~ or counterjamming ~~equipment)~~

(a)(5) Command and control ...

(i) ... systems ~~"specially designed" to integrate, incorporate, network, or employ~~ having any of the characteristics specified in the texts in the U.S. Munitions List describing defense articles controlled in this subchapter

(iv) Systems or equipment ~~implementing techniques to suppress~~ suppressing compromising emanations of information bearing signals ~~"specially designed" or~~ certified to meet ...
(Overlaps 5A002.a.4)

(v) Systems or equipment that transmit voice or data signals ~~"specially designed" to elude~~ eluding electromagnetic detection.`

~~(a)(7) Developmental electronic devices, systems, or equipment funded by the Department of Defense~~
~~Note 1. ...~~
~~Note 2. ...~~

(If "developmental" is interpreted narrowly, the item would not yet be ready for use and export from the developer being funded by DoD to another developer could be controlled by the terms of the DoD contract. Such export might be desirable if costs could thereby be contained through competition or cooperation among multiple developers. If "developmental" is interpreted broadly enough to include items which could be exported for use, then exporters who were not the developers would not normally know whether development of the item had been funded by DoD. This would be especially true if development and DoD funding had terminated years ago.)

(a)(11) ~~Test sets "specially designed" and programmed for~~ Equipment having characteristics needed for testing counter radio controlled improvised explosive device (C-RCIED) electronic warfare (CREW)) systems

(a)(12) Equipment ~~"specially designed" to process or analyze~~ having characteristics needed for

processing or analyzing signals from defense articles controlled by this category

(a)(13) Direction finding equipment ~~for~~ determining bearings to specific electromagnetic sources or terrain characteristics ~~"specially designed"~~ for defense articles in paragraph (a)(1) of Category IV ~~and~~ or paragraphs (a)(5) ~~and~~ or (a)(6) of Category VIII ~~(MT)~~

(b) Electronic systems or equipment ~~"specially designed" for the collection, surveillance, monitoring, or exploitation of~~ collecting, conducting surveillance, monitoring, or exploiting the electromagnetic spectrum (regardless of transmission medium), for intelligence or security purposes or for counteracting such activities~~. This includes~~ as follows:

(b)(1) Non-cooperative direction finding systems that have an angle of arrival (A0A) accuracy better than (less than) two degrees RMS and are not ~~"specially designed"~~ for navigation.

(The proposed definition of "specially designed" is not applicable to descriptions of what is not controlled.)

(b)(3) Systems and equipment ~~"specially designed"~~ for measurement and signature intelligence (MASINT)

(Overlaps 1A101 and 1C101.)

(b)(4) Technical surveillance countermeasures (TSCM) ... that: ...
(iii) Have built in signal analysis ~~capability~~

(c) ~~Parts,~~ components~~, accessories, attachments, and associated equipment~~, as follows:

(c)(1) Application specific integrated circuits (ASIC) for which the functionality is ~~"specially designed" for defense articles~~ a characteristic in the text of a U.S. Munitions List description of a controlled defense article in this subchapter.

(c)(2) Printed circuit boards or patterned multichip modules for which the layout is ~~"specially designed" for defense articles~~ a characteristic in the text of a U.S. Munitions List description of a controlled defense article in this subchapter. ...

(c)(7) Digital radio frequency memory (DRFM) with RF instantaneous input bandwidth greater than 400 MHz, and 4 bit or higher resolutions and ~~"specially designed" parts and~~ components therefor with one or both of the foregoing characteristics ...

(c)(9) ~~Antenna~~ Antennae with any of the following characteristics, and ~~"specially designed parts and~~ components ~~therefor~~ with any of the following characteristics, that: ...

(c)(10) Radomes or electromagnetic antenna windows that:
(i) ... ~~(MT)~~

(ii) ... ~~(MT)~~
(iii) Incorporate a structure that ~~is "specially designed" to provide~~ provides ballistic protection from bullets, shrapnel, or blast ~~(MT)~~
(iv) ... ~~(MT)~~
(v) ... ~~(MT)~~
(vi) ... ~~(MT)~~
(viii) ... ~~(MT)~~

(c)(11) Underwater sensors (acoustic vector sensors, hydrophones, or transducers) or projectors ~~"specially designed"~~ for systems controlled by (a)(1) ~~and~~ or ~~XI~~(a)(2) of this category, having any of the following:

((c)(11)(i. ii, iii, iv, v, vi) are identical to 6A001.a.1.b.1, 2, 3, 4. 5, 6)

(v) ~~Designed to operate~~ Operating with an unambiguous display range exceeding ...
(vi) ~~Designed to withstand~~ Withstanding pressure ... exceeding ...

(c)(12) ~~Parts or~~ components containing piezoelectric materials ~~which are "specially designed"~~ for underwater hardware, equipment, or systems controlled by paragraph (c)(11) of this category having any of the characteristics described in (c)(11) ...

(Overlaps 6A001.a.1.c, a.2.a.3.b, and a.2.a.3.c.)

(c)(14) Electronic assemblies and components ~~"specially designed"~~ for missiles, rockets, or UAVs ~~capable of~~ achieving a range of at least 300 km and ~~capable of operation~~ operating at temperatures in excess of 125^{o}C (MT)

(Covered by 3A001.a.2.a.)

(c)(15) ~~"Specially designed"~~ hybrid (combined analogue/digital) computers ~~for~~ modeling, ~~simulation, or design of~~ simulating, or designing systems enumerated in paragraphs (a)(1), (d)(1), (d)(2), (h)(1), (h)(2), (h)(4), (h)(8), ~~and~~ or (h)(9) of Category IV or paragraphs (a)(5) ~~and~~ or (a)(6) of Category VIII (MT)

(The public has not yet seen the cited paragraphs of Category IV.)

(c)(16) ~~Parts,~~ components~~, or accessories "specially designed" to modify or customize the properties (*e.g.*,~~ determining operating frequencies, algorithms, waveforms, CODECs, or modulation/demodulation schemes~~)~~ of a radio or information assurance/information security article controlled in this subchapter ~~beyond what is specified in the public domain or the published product specifications~~

(More technical detail is needed to explain what is meant by CODECs and by information assurance and to distinguish this information security item from XIII.b and 5A002. The exception for public domain and published information applies to technology rather than to components and applies generally, rather than just to selected items.)

~~(c)(17) Any part, component, accessory, attachment, equipment, or system that (MT for those articles designated as such):~~
~~(i) Is classified~~

~~(ii) Contains classified software; or~~
~~(iii) Is being developed using classified information.~~
~~(iv) *Classified* 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 international organization.~~

(d) ~~Technical data (see 120.10 of this subchapter)~~ "Technology" and "software" and defense services (see 120.9 of this subchapter) ~~directly related to~~ "required" for the "use" of the defense articles enumerated in paragraphs (a) through (c) of this category ~~and classified technical data directly related to items controlled in CCL ECCN 9E620 and defense services using the classified technical data~~. (*See* 125.4 of this subchapter for exemptions) ~~(MT for technical data and defense services related to articles designated as such.)~~

(Definitions of "technology," "software," "required," and "use" from the EAR should be added to ITAR (in the "use" definition, changing "and" to "or"). Since equipment for the production of USML Category XI is now controlled on the CCL, "development" and "production" technology and software should also be controlled on the CCL. MTCR covers "technology" for all MTCR controlled commodities but covers "software" only selectively.)

121.8(h) *Equipment* is a combination of ~~parts,~~ components~~, accessories, attachments,~~ firmware, or software that operate together to perform a ~~specialized~~ function of an end-item or a system

January 14, 2013

To: publiccomments@bis.doc.gov
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Subject: Military Electronic Equipment RIN 0694-AF64 and RIN 1400-AD25

The following comments respond to the subject proposed rule 28 RIN 0694-AF64, which appeared in the Federal Register on November 28, 2012. Some of them are also relevant to the proposed revision of USML Category XI RIN 1400-AD, which also appeared in the Federal Register on November 28. They address ambiguities between the CCL and the USML, within the CCL, and within the USML.

My January 3, 2013, comments on the Category XI proposal identified 14 overlaps between proposed Category XI and existing CCL coverage. Four more have since been discovered (XI(a)(10) vs. 2A984, XI(a)(13) vs. 5A001.e, XI(c)(4) vs. 3A001.e.2, and XI(c)(10)(vii) vs. 6A103). The November 28 BIS proposed rule states that one of the reform goals is to ensure that items currently EAR controlled are not unintentionally made ITAR controlled. There is no indication in either of the November 28 rules that any of these 18 overlaps were intentionally proposed to be transferred from EAR to ITAR. Attachment 1 to this letter suggests how to eliminate these 18 overlaps.

Attachment 2 suggests how to eliminate ambiguities in the November 28 CCL rule.

Attachment 3 suggests how to eliminate other CCL ambiguities believed to be relevant.. Many of these arise from statements in the CCL concerning Department of State jurisdiction.

Attachment 1

How to Eliminate 18 Overlaps in Proposed Category XI with Existing CCL Coverage

1. XI(a)(1)(i)(B) Underwater acoustic systems operating frequency less than 20 kHz
   Overlaps 6A001.a.1.b.1 and a.1.b.2
   Delete XI(a)(1)(i)(B). See #16 re XI(c)(11) below.

2. XI(a)(1)(i)(D) Underwater acoustic systems real-time processing
   Overlaps 6A001.a.2.c and a.2.f
   Either delete XI(a)(1)(i)(D) or add to XI(a)(1)(i)(D) technical specifications to describe types of real-time processing other than, or a subset of, a.2.c and a.2.f which would be ITAR-controlled. If the latter:
   add to XI(a)(1)(i)(D) cross references to 6A001.a.2.c and a.2.f; and
   add to 6A001 "not controlled by XI(a)(1)(i)(D)."

3. XI(a)(1)(v) submarine communications
   Overlaps 5A001.b.1 and 8A002.d.1
   Either delete XI(a)(1)(v) or add to XI(a)(1)(v) technical specifications to describe types of submarine communications other than, or a subset of, 5A001.b.1 or 8A002.d.1 which would be ITAR-controlled. If the latter:
   add to XI(a)(1)(v) cross references to 5A001.b and 8A002.d.1; and
   add to 5A001 and 8A002 "not controlled by XI(a)(1)(v)."

4. XI(a)(3)(i) airborne radar that tracks targets
   Overlaps 6A008.g, 6A108.b, and 6A998.a
   Either delete XI(a)(3)(i) or add to XI(a)(3)(i) technical specifications to describe types of airborne radar other than, or a subset of, 6A008.g which would be ITAR-controlled. If the latter:
   add to XI(a)(3)(i) cross references to 6A008.g, 6A108.b, and 6A998.a;
   add to 6A008 and 6A108 "not controlled by XI(a)(3)(i)"; and
   add to 6A998 "not controlled by XI(a)(3)(i), 6A008, or 6A108."

5. XI(a)(3)(ii) Synthetic aperture radar (SAR)
   Overlaps 6A008.d
   Delete XI(a)(3)(ii)

6. XI(a)(3)(iii) Inverse synthetic aperture radar IISAR)
   Overlaps 6A008.d
   Delete XI(a)(3)(iii)

7. XI(a)(3)(xii) Radar incorporating pulsed operation with electronic steering of transmit beam in elevation and azimuth

Overlaps 6A008.e incorporating “electronically steerable phased array antennae” and 6A008.k having “signal processing” subsystems using “pulse compression” and having any of the following: ...
Either delete XI(a)(3)(xii) or add to XI(a)(3)(xii) technical specifications to describe types of pulsed operation with electronic steering other than, or a subset of, 6A008.e or .k which would be ITAR-controlled. If the latter:
add to XI(a)(3)(xii) cross references to 6A008.e and .k; and
add to 6A008 “not controlled by XI(a)(3)(xii).”

8. XI(a)(3)(xvii) ... pulse Doppler processing where any single Doppler filter provides a normalized clutter attenuation of greater than 50 dB.
Overlaps 6A108.a Note .d Radar and laser radar systems designed or modified for use in “missiles” includes Doppler navigation equipment (6A108.a is DOS jurisdiction if for “missiles” or for items on USML per Related Controls (2))
Differs from existing USML XV.e Note 9, which specifies that space qualified laser radar is CCL and not USML unless for military applications.
Revise heading of XV.e Note to read: “The following are included in XV.e if for military use:”
revise XV.e.Note 9 to add “ (also see CCL 6A108.a) ”
add to XI(a)(3)(xvii) cross reference to 6A108.a Note .d
delete 6A108 Related Controls (2) DOS jurisdiction statement
add to 6A108.a “not controlled by XI(a)(3)(xvii) or XV.e Note 9".

9. XI(a)(3)(xxix) Radar and laser radar systems for IV.a.1 (missiles) or VIII.a.5 or a.6 (unarmed or armed UAVs)
Differs from existing USML XV.e Note 9, which specifies that space qualified laser radar is CCL and not USML unless for military applications.
Overlaps 6A008.j ... “laser” radar ... having any of the following: ...
Overlaps 6A108.a radar and laser radar systems designed or modified for use in “missiles”, which are DOS jurisdiction if for “missiles” or for items on USML per Related Controls (2)
Revise heading of XV.e Note to read: “The following are included in XV.e if for military use:”
revise XV.e.Note 9 to add “ (also see CCL 6A008.j and 6A108.a) ”
add to XI(a)(3)(xxix) cross references to 6A008.j and 6A108.a
delete 6A108 Related Controls (2) DOS jurisdiction statement
add to 6A008.j and to 6A108.a “not controlled by XI(a)(3)(xxix) or XV.e Note 9".

10. XI(a)(5)(iv) systems suppressing compromising emanations of information bearing signals
Overlaps 5A002.a.4
Delete XI(a)(5)(iv)

11. XI(a)(10) detection of concealed weapons

Overlaps 2A984, 2D984, 2E984 Concealed object detection equipment with specified frequency and spatial resolution and software and technology therefor (all marked DOS jurisdiction)
If Export Control Reform does not change 2A984 substance and jurisdiction, it should be deleted from the CCL and be added to proposed XI(a)(10

12. XI(a)(13) direction finding equipment for determining bearings to specified electromagnetic sources or terrain characteristics for missiles or armed or unarmed UAVs
Overlaps 5A001.e radio direction finding > 30 MHz, instantaneous bandwidth $\geq$ 10 MHz, and finding line of bearing to non-cooperative radio transmitter with signal < 1 ms (marked DOS jurisdiction)
Delete 5A001 statement of DOS jurisdiction for 5A001.e;
add to 5A001.e "not controlled by USML XI(a)(13);
add to XI(a)(13) "(also see 5A001.e)".

13. XI(b)(3) systems for measurement and signature intelligence
Overlaps 1A101, 1C101, 1D103, 1E101 Devices for reduced observables such as radar reflectivity, ultraviolet/infrared signatures and acoustic signatures usable in "missiles" and their subsystems and software and technology therefor (1A101, 1C101, and 1D103, but not 1E101, marked DOS jurisdiction for similar items)
In XI(b)(3), add for rockets, missiles, or UAVs with 300 km "range";
In XI(b)(3), add cross reference to 1A101, 1C101, 1D103, 1E101;
1A101 and 1C101, change "missiles" to rockets, missiles, or UAVs with 300 km "range" and specify the subsystems for consistency with MTCR 17.A.1;
Delete DOS jurisdiction statements in 1A101, 1C101, and 1D103,
add to 1A101 and 1C101 "not controlled by USML XI(b)(3)";
` (The result would be DOC jurisdiction for signature systems "for" other purposes which, nevertheless, are "usable in" rockets, missiles, or UAVs with 300 km "range.")

14. XI(c)(4) high energy storage capacitors with technical characteristics
Overlaps 3A001.e.2 high energy storage capacitors with different technical characteristics
Add to 3A001.e.2 "not controlled by USML Category XI(c)(4)"
Add to XI(c)(4) "see also 3A001.e.2"

15 XI(c)(10)(vii) radomes to withstand thermal shock
Overlaps 6A103 radomes to withstand thermal shock with different technical characteristics (marked DOS jurisdiction)
Overlaps 6D003.h.2 software for radomes to protect electronically steerable phased array antenna and resulting in antenna pattern with specified average side lobe level
MTCR 18.A.3 radomes to withstand thermal shock greater than XI(c)(10)(vii) technical parameters usable in protecting rocket systems and UAVs against nuclear effects and usable for "missiles"

Delete 6A103;
Expand XI(c)(10)(vii) to conform with all of MTCR 18.A.3;
add to XI(c)(10)(vii) cross reference 6D003.h.2;
add to 6D003.h.2 cross reference to XI(c)(10)(vii)

16. XI(c)(11)... hydrophones having any of the following:
XI(c)(11)(i, ii, iii, iv, v, vi) are identical to 6A001.a.1.b.1,2,3,4,5,6.
Delete XI(c)(11)
(There is no DOS jurisdiction carve-out from 6A001.)

17. XI(c)(12) Components containing piezoelectric materials for underwater items controlled by (c)(11)
Overlaps 6A001.a.1.c, a.2.a.3.b, and a.2.a.3.c; also overlaps 1A001.b
Delete XI(c)(12) and delete 1A001 Related Controls (1).
(There is no DOS jurisdiction carve-out from 6A001. The statement in 1A001 Related Controls (1) ("Items specially designed or modified for missiles or for items on the U.S. Munitions List are subject to the export licensing authority of the U.S. Department of State") does not assert DOS relevance to 1A001.)

18. XI(c)(14) Electronic assemblies and components for missiles, rockets, or UAVs with a range of at least 300 km operating at temperatures in excess of 125^{o}C
Overlaps 3A001.a.2.a
Delete XI(c)(14); and
revise 3A001 MT applies to include a.2.a if for missiles, rockets, or UAVs with a range of at least 300 km
(Also see Attachments 2 and 3 re 3A001)

Attachment 2

How to Eliminate CCL Military Electronics Ambiguities in November 28 Proposal

3A001 MT applies to 3A001.a.1.a when usable in "missiles", a.2.a if for missiles, rockets, or UAVs with a range of at least 300 km, a.2.c, ~~and to~~ or a.5.a when ~~"designed or modified" for military use, hermetically sealed and rated for operations in the temperature range from below -54°C for above + 125°C~~ also described in 3A101

(Also see item 18 in Attachment 1 and Attachment 3 re 3A001.)

3A101 Electronic equipment, devices and components, ~~other than those~~ not controlled by 3A001.a.1.a, a.2.c, or a.5.a, 4A001.a.1 or a.2.a , or 4A003.e, as follows (see List of Items Controlled)

(There is a big difference between "other than those" and "not" controlled.

The portions of 3A001.a.1.a, 3A001.a.2.c, 3A001.a.5.a, 4A001.a.1 or a.2.a, and 4A003.e also described in 3A101.a would be controlled by 3A001, 4A001, or 4A003, rather than by 3A101.)

Related Controls: ~~See also ECCN 4A003.e for controls on electrical input type analog to digital converter printed circuit boards or modules~~ N/A

(Inclusion of 4A003.e in the heading makes it unnecessary to refer to it in Related Controls. The proposed Related Controls text deviates from the following text of 4A003.e: "Equipment performing analog-to-digital conversions exceeding the limits in 3A001.a.5." Showing revised 3A101 Related Controls as "N/A" would make clear the intent to delete the current statement that 3A101.a is subject to the export licensing authority of the Department of State. The proposed rule implies, but does not unequivocally state, such deletion.)

a.1 ~~"Specially designed" to meet~~ Meeting military specifications for ruggedized equipment.

(MTCR uses the word "Designed," instead of "Specially designed." The MTCR definition of "designed or modified" could be construed as being applicable to "designed." The unique MTCR definition of "specially designed" is narrower than the "may be used for other applications" portion of the MTCR definition of "designed or modified." Deletion of "Designed" is recommended, because of the adequacy of the proposed technical description of MTCR wording in proposed 3A101.a. This would strengthen the control. It would, therefore, not be precluded by legislation now interpreted to prohibit license exception eligibility for MT items.)

a.2 Analog-to-digital converter microcircuits which are ~~radiation hardened~~ "radiation hardened"

(The MTCR definition of "radiation hardened" should be added to the EAR. That definition is identical to 3A001.a.1.a and 4A001.a.2.a. However, MT controls apply to all countries except Canada. They are, therefore, broader than 3A001.a.1.a and 4A001.a.2.a, which otherwise are controlled only to NS2 countries. On the other hand, 3A101 coverage of radiation hardened is narrower than the MTCR definition, because of useable in "missiles" in the heading of

3A101.)

a.3.b Rated for operation in the temperature range from <u>below</u> -54°C to above + 125°C (MTCR text includes "below.")

3A611 NS applies to entire entry except 3A611.y NS Column 1
RS applies to entire entry except 3A611.y RS Column 1

(This ECCN, and most, perhaps all, of the other 600 series ECCNs, includes both multilateral and unilateral controls. The EAA proscribes NS unilateral controls in the absence of efforts to multilateralize those controls. RS controls are not similarly proscribed. Using RS as a means to evade the NS proscription is questionable. Even if those questions may be satisfactorily answered, applying NS to the unilateral portions of 600 series ECCNs is inconsistent with the EAA.)

3A611 Related Controls: (1) Electronic items that are enumerated in USML Category XI or other USML Categories~~, and technical data (including software) directly related thereto)~~ are subject to the ITAR.

(The EAR should use "technical data" only as it is defined in part 772. The EAR should not use the undefined term "directly related." Some technology now on the USML is not directly related to commodities on the USML, *e.g.*, 7E104 and 9E001 and 9E002 for 9A004. Conversely, MTCR controls no technology or software for USML-controlled 9A103. ITAR does not control software for all USML-controlled commodities, *e.g.*, 9B116 software included in the definition of "production facilities." Most MTCR software items are limited to "use" software. MTCR does not control any software for the numerous USML-controlled materials in MTCR Item 4 (USML Category V). All USML-controlled technology or software is enumerated on the USML. The word "items" includes technology and software as well as commodities. Therefore, the above recommended revision would include all USML-controlled technology and software, as well as commodities, as being subject to the ITAR.)

3A611.a Note: ~~3A611.a~~ <u>3A611</u> includes any <u>acoustic,</u> radar, telecommunications, or computer equipment, end items, or systems "specially designed" for military use that are not enumerated in any USML category or controlled by ~~a~~ <u>another</u> ~~"600 series"~~ ECCN.

3A611.c MMIC power amplifiers overlaps 3A001.b.2 MMIC power amplifiers
3A611.d Discrete microwave transistors overlaps 3A001.b.3 Discrete microwave transistors
Recommend deletion of 3A611.c and .d and considering them later as the basis for U.S. proposals in Wassenaar to revise 3.A.1.b.2 and b.3.

(The similarities between 3A611.c , .d and 3A001.b.2, b.3, respectively, coupled with no mention in 3A001 Related Controls of DOS jurisdiction for any parts of 3A001.b.2 or b.3, indicate that 3A611.c and .d were not heretofore considered to have been USML controlled. The usual means to avoid duplicate coverage would be to introduce 3A611.c with "not controlled by 3A001.b.2" and introduce 3A611.d with "not controlled by 3A001.b.3." But 3A611.c and .d explicitly include language from 3A001.b.2 or b.3. The

latter cannot simply be deleted and replaced by 3A611.c and .d, because there are some portions of 3A001.b.2 and b.3 which are not included in 3A611.c and .d and the United States is committed to comply with Wassenaar 3.A.1.b.2 and b.3. A U.S. proposal for multilateral coverage is the EAA pre-requisite for unilateral NS controls.)

3A611.e Radar "tracking" maritime surface targets or low altitude airborne targets overlaps 6A008.l.1 "automatic target tracking" providing predicted target position ... and also overlaps proposed Category XI.a.3, especially a.3.v ocean surface surveillance radar
Recommend either deletion of 3A611.e or addition to 3A611.e of technical specifications to describe types of radar tracking other than, or a subset of, 6A008.l.1, not included in proposed Category XI.a.3. If the latter:
add to 3A611.e "not controlled by 6A008.l.1";
add to 6A008 Related Controls "See also 3A611.e"; and
add to the EAR a definition of "tracking."

3A611.x Note 1: 3A611.x includes parts, components, accessories, and attachments "specially designed" for ~~a~~ an acoustic, radar, telecommunications, or computer end item "specially designed" for military use that are neither enumerated in any USML Category nor controlled in another ~~"600 series"~~ ECCN

(Except for ECCNs xx018, components for existing ECCNs, especially those to comply with Wassenaar or MTCR controls, should remain separate from 600 series.)

.
3A611.x Note 2 is inconsistent with Note 1, beecause the piezoelectrics described in Note 2 are enumerated in XI(c)(12). Attachment 1 Item 17 above recommends that XI(c)(12) be deleted in order to remove an overlap with 6A001. If that were done, the reference to XI(c)(12) should be deleted from 3A611.x Note 2. However, the Note might otherwise still serve a purpose. It is believed that magnesium niobate lead titanate is not otherwise mentioned in either the USML or CCL.

3D611 "Software" ~~"specially designed"~~ "required" for military electronics, as follows

3D611 Related Controls: "Software" ~~directly related to~~ "required" for the "use" of articles enumerated in USML Category XI is subject to the control of USML paragraph XI(d).

3D611.a ~~Software~~ "Software" ~~"specially designed"~~ "required" for the "development," "production," ~~operation or maintenance~~ or "use" of ~~commodities~~ items controlled by 3A611 (~~other than~~ except 3A611.y), 3B611, or 3D611 or for the "development" or "production" of USML Categor XI

~~3D611.b. through x. RESERVED~~

3D611.b "Software" not enumerated in the USML or otherwise enumerated in the CCL performing the military functions of equipment enumerated in USML Category XI or 3A611.

3D611.c. through x. RESERVED

3D611.y. Specific "software" ~~"specially designed"~~ "required" for the "development," "production," ~~operation or maintenance~~ or "use" of commodities enumerated in ~~ECCNs~~ ECCN 3A611.y.

(There would be no substantive change by substituting "required" for "specially designed." This is because software is not a component and the non-component portion of the proposed "specially designed" definition is the definition of "required." Such a substitution would also be consistent with the applicability to software of the EAR definition of "required." The EAR should not use the undefined term "directly related.")
(WML21.a controls "software" for the "use" of equipment, materials, or "software" specified by the Munitions List. WML 21.c controls "software" not specified by ML21.a or .b, to perform the military functions of equipment specified by the Munitions List.)
(In the EAR definition of "use," "and" should be changed to "or.")
(3D611 should control "software" for the "development" or "production" of Category XI for consistency with applicability of 3B611.a to test, inspection, and production equipment for Category XI if not enumerated in XI. The only such equipment enumerated in XI is XI(a)(11).)
(3D611.b is to comply with WML 21.c)

3E611 Related Controls: "Technology" ~~directly related to~~ "required" for the "use" of articles enumerated in USML Category XI is subject to the control of USML paragraph XI(d).

3E611.a "Technology" ~~(other than that described in~~ not controlled by 3E611.b, 3E611.c, or 3E611.y~~) not otherwise enumerated in this ECCN~~ "required" for the "development," "production," ~~operation, installation, maintenance, repair, or overhaul~~ or "use" of commodities or "software" controlled by ECCNs 3A611, 3B611, or 3D611 or "technology" "required" for the "development" or "production" of USML Category XI.

3E611.b "Technology" required for the "development," "production," ~~operation, installation, maintenance, repair, or overhaul~~ or "use" of: ...

~~3E611.c through x. RESERVED~~

3E611.c 'Technology" "required" for the design of, the assembly of components into, and the operation, maintenance and repair of, complete production installations for items specified by the U.S. Munitions List or "600 series" ECCNs, even if the components of such production installations are not specified.

(To comply with WML 22.b.1)

3E611.d through x. RESERVED

3E611.y Specific "technology" "required" for the "development," "production," ~~installation,~~

~~maintenance, repair or overhaul~~ or "use" of commodities or "software" enumerated in ECCNs 3A611.y or 3D611.y

4A001 MT applies to ~~items in 4A001.a when the parameters in 4A101 are met or exceeded~~ 4A001.a.1 or a.2.a when also described in 4A101.;

4A003 MT applies to 4A003.e when ~~the parameters in 3A101.a.4 are met or exceeded~~ also described in 3A001.a.1.a, 3A101, 4A001.a.2.a, or 4A101

4A101 ... computers ... ~~other than those~~ not controlled by 4A001.a.1 or a.2.a ...

4A611 Computers ... for military use that are not enumerated in any USML Category or other ECCN are controlled by ECCN 3A611

(For consistency with 6A611.)

5A611 Telecommunications and Information Security Equipment ... for military use that are not enumerated in any USML Category or other ECCN are controlled by ECCN 3A611

6A611 Acoustic Systems and Equipment, Radar, and ...

The following recommended revisions to CCL Category 7 Navigation and Avionics are limited to those directly relevant to 7A006 and 7A106, concerning which the November 28 rule proposes changes. Recommended revisions to other related portions of CCL Category 7 ECCNs are in Attachment 3. Most of the Attachment 3 recommendations are electronic; but some may not be.

7A006
MT applies to ~~commodities in this entry that meet or exceed the parameters of 7A106~~ 7A006 when also described in 7A106.

7A106 Altimeters, ~~other than those~~ not controlled by 7A006, of radar or laser radar type ~~designed or modified~~ for ~~use in~~ "missiles". ~~(These items are subject to the export licensing authority of the U.S. Department of State, Directorate of Defensee Trade Controls. See 22 CFR part 121.)~~

(Altimeters are not included in the November 28 proposed Category XI. Also see items 4 through 9 in Attachment 1 re 6A008 and 6A108)

7A611 Navigation and avionics parts, components, accessories, and attachments "specially designed" therefor, "specially designed" for military use that are not enumerated in any USML Category or other ECCN are controlled by ECCN 3A611

7B001 Test, calibration or alignment equipment ~~specially designed~~ for equipment controlled by ~~7A (except 7A994)~~ 7A001 to 7A006, 7A008, 7A116, or 7A117, including items, or portions thereof, subject to the export licensing authority of the U.S. Department of State, Directorate of

Defense Trade Controls

(7A101 to 7A104 are omitted, because MTCR 9.B.1 controls test equipment used "with," not "for," equipment specified in 9.A and this equipment is covered by 7B101. 7A105, 7A106, and 7A115 are omitted, because MTCR 11 does not control any test equipment. 7A116 and 7A117 are included to conform with MTCR 2.B.1, 2.B.2, and 10.B.1)

NS applies to ~~entire entry~~ equipment for 7A001 to 7A006 or 7A008

MT applies to ~~entire entry~~ equipment for 7A116 or 7A117 or with 7A004 or the MT portions of 7A001, 7A002, or 7A003.

(7A005 and 7A006 are omitted from "MT applies" because MTCR 11 does not control any test equipment.)

7D001 "Software" ~~specially designed or modified~~ according to the General Software Note for the "development" or "production" of equipment controlled by ~~7A (except 7A994) or 7B (except 7B994)~~ 7A001 to 7A004, 7A006, 7A008, or 7B001 to 7B003

~~MT applies ...~~

(MTCR does not control development or production software for CCL Category 7 items.)

TSR: ~~N/A~~ Yes

Related Controls: ... ~~(2) The "software" related to 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115, 7A116, 7A117, or 7B103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 CFR part 121,) (3) "Software" for inertial navigation systems and inertial equipment, and specially designed components therefor, not for use on civil aircraft are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Contrrols. (See 22 CFR part 121.)~~

(For consistency with Commerce jurisdiction for production of USML items.)

7D101 "Software" ~~specially designed or modified~~ according to the General Software Note , not controlled by 7D002 or 7D003. for the "use" of equipment controlled for MT reasons by ...

Related Controls: (1) ~~The~~ "software" ~~related to~~ for the "use" of the portions of the following ECCNs which are subject to the export licensing of the U.S. Department of State: 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115, 7A116, 7A117, or 7B103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 CFR part 121,) ~~(2) "Software" for inertial navigation systems and inertial equipment, and specially designed components therefor, not for use on civil aircraft are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Contrrols. (See 22 CFR part 121.)~~

7E001

MT applies to ~~technology for equipment controlled for MT reasons. MT does not apply to "technology" for equipment controlled by 7A008. MT does apply to~~ "technology" for equipment ~~specified in~~ controlled for MT reasons by ~~7A001, 7A002, or 7A003.d that meets or exceeds parameters of 7A101, 7A102, or 7A103~~ 7A001 to 7A006, 7A101 to 7A107, 7A115 to 7A117, 7B001 to 7B003, 7B101 to 7B103, 7D002, 7D003, 7D101 to 7D103

TSR: ~~N/A~~ Yes except MT

Related Controls: ... (2) The "technology" ~~related to~~ for the "use" of the portions of the following

ECCNs which are subject to the export licensing authority of the U.S. Department of State 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115. 7A116. 7A117, ~~or~~ 7B103 ~~software in 7D101 specified in the Related Controls paragraph of ECCN~~ 7D101, 7D102.a, or 7D103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Control (see 22 CFR part 121).

7E002
MT applies to ~~technology for equipment controlled for MT reasons. MT does not apply to "technology" for equipment controlled by 7A008. MT does apply to~~ "technology" for equipment ~~specified in~~ controlled for MT reasons by ~~7A001, 7A002, or 7A003.d that meets or exceeds parameters of 7A101, 7A102, or 7A103~~ 7A001 to 7A006, 7A101 to 7A107, 7A115 to 7A117, 7B001 to 7B003, 7B101 to 7B103
TSR: ~~N/A~~ Yes except MT
Related Controls: ... (2) The "technology" ~~related to~~ for the "use" of the portions of the following ECCNs which are subject to the export licensing authority of the U.S. Department of State 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115. 7A116. 7A117, or 7B103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Control (see 22 CFR part 121).

7E101 "Technology" according to the General Technology Note not controlled by 7E001 to 7E004 for the "use" of equipment controlled by ... ~~7B001,~~ ...
Related Controls: The "technology" ~~related to~~ for the "use" of the portions of the following ECCNs which are subject to the export licensing authority of the U.S. Department of State 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115. 7A116. 7A117, 7B103, ~~software specified in the Related Controls paragraph of ECCN~~ 7D101, 7D102.a, or 7D103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Control (see 22 CFR part 121).

7E102 "Technology" according to the General Technology Note not controlled by 7E001 to 7E004 for protection of avionics ...

9A620 Cryogenic and "superconductive" equipment not controlled by 1C005, 3A001.d, 3A001.e.3, 3A201.b, 6A002.d.1, 6A006.a.1, or 8A002.o.2.c, as follows ...
Unit: ... ~~parts,~~ components~~,~~ and accessories ~~and attachments~~ in $ value
Related Controls: (1) Electronic items that are enumerated in USML Category XI or other USML categories~~, and technical data directly related thereto,~~ are subject to the ITAR. (2) See also 6A996.b.

("Items" includes technology and software. Technology includes technical data.)

a. Equipment ~~"specially designed" to be installed~~ in a vehicle for military ground, marine, airborne, or space applications, ~~and capable of~~ operating while in motion and ~~of~~ producing or maintiaining temperatures below 103 K (- 170^{o}C)

b "Superconductive" electrical equipment (rotating machinery and transformers) ~~"specially designed" to be installed~~ in a vehilce for military ground, marine, airborne, or space applications, ~~and capable of~~ operating while in motion.

x ~~"Parts,"~~ "components," and "accessories" ~~and "attachments" that are "specially designed"~~ for a commodity controlled by ECCN ~~9A620~~ 9A620.a or 9A620.b having any of the characteristics described in the texts of those sub-items.

Add to Related Controls in 1C005, 3A001.d, 3A001.e.3, 3A201.b, 6A002.d.1, 6A006.a.1, or 8A002.o.2.c "See also 9A620."

9B620 Test, inspection, and production commodities for cryogenic and "superconductive" equipment, as follows (see List of Items Controlled):
Items: Test, inspection, ~~and~~ or production end-items ~~and~~ or equipment ~~"specially designed" for items controlled in ECCN 9A620~~ having any of the characteristics described in 9A620.a or 9A620.b

9D620 "Software" ~~"specially designed"~~ according to the General Software Note for cryogenic and "superconductive" equipment, as follows (see List of Items Controlled)
Related Controls: "Software" ~~directly related to articles~~ enumerated on USML are subject to the control of that USML
(Software for development or production of USML commodities is subject to the EAR.)
Items: "Software" ~~"specially designed"~~ for the "development," "production," ~~operation or maintenance~~ or "use" of commodities or "software" controlled by ECCNs 9A620, ~~or~~ 9B620, or 9D620

9E620 "Technology" ~~"required"~~ according to the General Technology Note not controlled by 3E003.c for cryogenic and "superconductive equipment, as follows (see List of Items Controlled)
Related Controls: ~~Technical data directly related to articles~~ "Technology" enumerated on USML ~~are subject to the control of that USML~~ is subject to USML control.
Items: "Technology" ~~"required"~~ for the "development," "production," ~~operation or maintenance~~ or "use" of commodities or "software" controlled by ECCNs 9A620, ~~or~~ 9B620, or 9D620

Attachment 3

How to Eliminate Other CCL Military Electronic Ambiguities

0A002, 0D001, 0E001 Power generating equipment for use with space, marine, or mobile nuclear reactors and software and technology therefor (all marked DOS jurisdiction; no reference found in current USML or in proposed Category XI)
Overlap 2A290, 2D290, 2E290 Generators and other equipment for nuclear plants and software and technology therefor (none marked DOS jurisdiction)
Delete DOS jurisdiction statements in 0A002, 0D001, and 0E001;
Cross reference 2A290 in 0A002, 2D290 in 0D001, and 2E290 in 0E001;
Cross reference 0A002 in 2A290, 0D001 in 2D290, and 0E001 in 2E290

1A001.b. See Item 17 in Attachment 1

1A004.a, b detection and 1A004.c,d protection equipment and components not for military use
1D003 software to perform 1A004.c,d functions
1E001 technology development or production of 1A004
1E002.g technology to perform 1A004.c,d functions
(1A004, but not 1D003, 1E001 for 1A004, or 1E002.g, marked DOS jurisdiction if XIV.f and if for military applications, or if commercial equipment includes XIV.f components unless components integral to commercial device, inseparable from device, and incapable of replacement; USML XIV.f .2 covers detection and XIV.f.4,5 cover individual or collective protection for military operations and compatibility with military equipment; not in proposed Category XI)
Delete 1A004 DOS jurisdiction statement;
add to 1A004 “not controlled by USML IV.f”;
add to IV.f the conditions under which it applies from existing 1A004 DOS jurisdiction statement
add to IV.f “(also see 1A004)”
(See also 2A291 in Attachment 3 below)

1A006 Equipment for disposal of improvised explosive devices as follows (remotely operated vehicles and disruptors)
1E001 technology for development or production of 1A006.b disruptors
(1A006, but not 1E001 for 1A006.b, marked DOS jurisdiction if for military use; no reference found in current USML or in proposed Category XI)
Delete 1A006 DOS jurisdiction statement

1A007 Equipment to initiate charges
1E001 technology for development or production of 1A007
3A229 firing sets for 3A232 detonators
3A232 detonators and multipoint initiation systems to nearly simultaneously initiate an explosive surface over a specified area from a single firing signal with a specified initiation timing spread

USML II.c devices for delivering ordinance,
USML IV.c devices for detonation of missiles
(Related Controls in1A007, 3A229, and 3A232, but not 1E001 for 1A007, marked DOS jurisdiction for high explosives and related equipment but do not assert DOS jurisdiction for any portions of these ECCNs; no reference in proposed Category XI)
Delete DOS jurisdiction statements in 1A007, 3A229, and 3A232
Add to 1A007, 3A229, and 3A232 "not controlled by USML II.c or IV.c
Add to II.c and IV.c cross references to 1A007, 3A229 and 3A232
1A101, 1C101, 1D103, 1E101 - see item 13 in Attachment 1

1A102, 1C102, 1D002, 1E001 for 1A102, 1E101 for 1A102, 1E104 Resaturated pyrolized carbon-carbon missile or UAV components and software and technology therefor
(all marked DOS jurisdiction except 1E104)
IV.f covers carbon/carbon ablative materials
MTCR 6.A.2 and 6.C.2 control carbon carbon components for rockets usable in missiles
Delete DOS jurisdiction statements in 1A102, 1C102, 1D002, 1E001 for 1A102, 1E101 for 1A102,
Revise IV.f to carbon/carbon fabricated or semi-fabricated for components of "missiles" or "missile subsystems" or UAVs with 300 km "range" (also see 1A102 and 1C102)
Revise 1A102 and 1C102 to use MTCR 6.A.2 and 6.C.2 wording
Add to 1A102 and 1C102 "not controlled by USML IV.f"
Add to 1A102 and 1C102 MT applies to entire entry MT Column 1
Add to 1A102 and 1C102 AT applies to entire entry AT Column 1

2A001, 2A991, 2D001, 2E001, 2E002 Anti-friction bearings and software and technology therefor (2A001 and 2A991, but not 2D001, 2E001, or 2E002, marked DOS jurisdiction for quiet-running bearings; no coverage found in current USML or proposed Category XI)
Delete DOS jurisdiction statements in 2A001 and 2A991.

2A291.e, 2D290, 2E290 Nuclear radiation detection and measuring (2A291, but not 2D290 or 2E290, marked DOS jurisdiction if for military purposes; no coverage found in current USML or proposed Category XI)
Delete DOS jurisdiction statement in 2A291
(See also 1A004 in Attachment 3 above)

2A984, 2D984, 2E984 - see Item 11 in Attachment 1

3A001.a.1 radiation hardened integrated circuits (marked DOS jurisdiction per existing XV.d; not included in proposed Category XI)
Delete 3A001.a.1 DOS jurisdiction;
If XV.d retained in future proposed Category XV:
add to 3A001.a.1 "not controlled by USML Category XV.d";
add to XV.d cross reference to 3A001.a.1
(Also see Attachment 2 re MT applies to 3A001.a.1 ...)

3A001.a.2.a - see item 18 in Attachment 1

3A001.b.1.a.4.c helix traveling wave tube
3A001.b.4.b microwave solid state amplifier
3A001.b.8 traveling wave tube amplifiers
3D001 development or production software for 3A001.b
3D002 use software for 3A001.b
3E001 development or production technology for 3A001.b
3E003.g technology for development or production of electronic vacuum tubes operating at frequencies of 31.8 GHz or higher
(all three 3A001.b and 3D001,3E001, and 3E003.g DOS if space qualified and >31.8 GHz; all three 3A001.b listed in USML XV.e. Note 1 as on the CCL and not included in USML unless for military application; not in proposed Category XI)
Delete three DOS jurisdiction statements re 3A001.b, 3D001, 3E001, 3E003.g;
revise heading of XV.e Note to read: “The following are included in XV.e if for military use:”
revise XV.e.Note 1 to add “operating at frequencies higher than 31.8 GHz (also see CCL 3A001.b.1.a.4.c, b.4.b, and b.8; 3D001, 3D002, 3E001 therefor; and 3E003.g) ”
add to 3A001.b.1.a.4.c, b.4.b, and b.8 “not controlled by USML Category XV.e Note 1”
add to 3D002 “not controlled by XV.e Note 1 if for 3A001.b.1.a.4.c, b.4.b, or b.8"

3A001.d devices containing “superconductive” materials - see 9A620 in Attachment 2

3A001.e.2 capacitors- see item 14 in Attachment 1

3A001.e.3 “Superconductive”electromagnets and solenoids - see 9A620 in Attachment 2.

3A001.e.4 Solar cells space qualified minimum average efficiency exceeding 20%
3D001 development or production software for 3A001.e.4
3D002 use software for 3A001.e.4
3E001 devlopment or production technology for 3A001.b
USML XV.e. Note 2 lists space qualified photovoltaic arrays having silicon cells or having single, dual, triple junction solar cells that have gallium arsenide as one of the junctions as on the CCL and not included in USML unless for military application
(DOS jurisdiction minimum average efficiency 31% or greater and associated specified equipment, per Related Controls in 3A001.e.4, 3D001, and 3E001, but not 3D002; no reference in proposed Category XI)
Delete 3A001.e.4, 3D001, and 3E001 DOS jurisdiction statements;
revise heading of XV.e Note to read: “The following are included in XV.e if for military use:”
revise XV.e.Note 2 to resolve differences between that Note and the 3A001.e.4 DOS jurisdiction statement;
add to XV.e Note 2 “(also see CCL 3A001.e.4) ”
add to 3A001.e.4 “not controlled by USML Category XV.e Note 2”

3A002.a Recording equipment, as follows
3D001 development or production software for 3A002.a
3D002 use software for 3A002.a
3E001 devlopment or production technology for 3A002.a
USML XV.e Notes 3 and 5 list space qualified tape recorders and space qualified data recorders as on the CCL and not included in USML unless for military application
(no DOS jurisdiction statement re 3A001.a or 3D001, 3D002, 3E001 therefor; not in proposed Category XI;)
Revise heading of XV.e Note to read: "The following are included in XV.e if for military use:"
add technical specifications to XV.e Notes 3 and 5
add to XV.e Notes 3 and 5 "(also see CCL 3A002.a) "
add to 3A002.a "not controlled by USML Category XV.e Notes 3 or 5"

3A002.g.1 space qualified atomic frequency standards
3D001 development or production software for 3A002.g.1
3D002 use software for 3A002.g.1
3E001 devlopment or production technology for 3A002.g.1
USML XV.e Note 4 lists atomic frequency standards which are not space qualified as on the CCL and not included in USML unless for military application
(DOS jurisdiction statements in 3A002.g.1, 3D001, and 3E001, but not in 3D002; not in proposed Category XI)
Delete XV.e Note 4
add separate XV.e Note "XV.e includes space qualified atomic frequency standards whether or not for military use (also see 3A002.g.1)";
delete DOS jurisdiction statements re 3A002.g.1 and 3D001 and 3E001 therefor;
add to 3A002.g.1 "not controlled by USML XV.e Note x)"

3A101.a analog-to-digital converters usable in "missiles' for ruggedized equipment and
3A101.b accelerators delivering specified electromagnetic radiation usable for "missiles" or subsystems of "missiles"
3D101 for use of 3A101.b
(DOS jurisdiction statement in existing 3A101 Related Controls but not in November 28 proposed revision of 3A101 Related Controls; not found in existing USML; not in proposed USML Category XI)
Delete DOS jurisdiction statement in existing 3A101 Related Controls.
(Also see Attachment 2 re 3A101.a)

3A229 and 3A232 - see 1A007 in Attachment 3, above

4A001 Computers radiation hardened (DOS jurisdiction transient ionizing radiation;
not found in current USML or in proposed Category XI)
Delete DOS jurisdiction statement in 4A001.
(Also see Attachment 2 re 4A001, 4A003 and 4A101 and Attachment 3 re 5A001.a.2.)

4A102, 7D103, 9D103 Hybrid computers for simulation of “missiles” and software therefor
(DOS jurisdiction; not found in existing USML or in proposed Category XI)
Delete DOS jurisdiction statements in 4A102, 7D103, 9D103;
conform texts of 4A102, 7D103, 9D103 with MTCR 16.A.1 and 16.D.1

5A001 Telecommunications
5A001.a.1 withstand transitory electronic or electromagnetic pulse effects
5A001.a.2 withstand gamma, neutron or ion radiation
5A001.a.3 outside temperature range from 218 K to 397 K
(5A001.a.1, a.2, a.3 DOS jurisdiction for use on board satellite; not found in existing USML or in proposed Category XI.)
Delete DOS jurisdiction
If DOS jurisdiction is mandated by legislation for use on satellites:
add to XI.a texts of 5A001.a.1 to a.3 “on board satellites (also see 5A001.a)”;
add to 5A001.a.1, a.2, a.3 “not controlled by XI.a”

(See Item 12 in Attachment 1 re 5A001.e and see 4A001 in Attachment 3, above)

(Also see item 3 in Attachment 1 re 5A001.b.1)

5E001.b.1 technology for development or production of telecommunications equipment to be used on board satellites
5E001.b.2 technology for development or use of laser communication techniques automatically acquiring and tracking signals
5E001.b.4 technology for development of spread spectrum, including frequency hopping
5E001.c technology for development or production of equipment having any of numerous technical characteristics
(DOS jurisdiction for use on board satellites; USML XV.e Note 6 lists space qualified telecommunications equipment not designed for satellite use and Note 7 lists technology for development or production of telecommunications equipment for non-satellite use as on the CCL and not included in USML unless for military application; not in proposed USML Category XI)
Delete XV.e Notes 6 and 7
add separate XV.e Note “XV.e includes telecommunications equipment for use on board satellites (also see 5E001.b.1, b.2, b.4, and .c)”;
delete DOS jurisdiction statement from 5E001 Related Controls;
add to 5E001.b.1 “(subject to Department of State jurisdiction, see USML XV.e Note x)”
add to 5E001.b.2, b.4, and .c “not controlled by USML XV.e Note x)”

6A001 - see items 1, 2, 16, and 17 in Attachment 1

6A002.a.1 space qualified solid state detectors as follows
6A002.a.2 image intensifier tubes as follows
6A002.a.3 non-space qualified focal plane arrays as follows
6A002.b.2.b.1 space qualified imaging sensors
6A002.d.1 space qualified cryocoolers

6D002 software for use of 6A002.b
6E001 technology for development of 6A002
6E002 technology for the production of 6A002
(DOS jurisdiction for 6A002.a.1, b.2.b.1, and d.1 and, if for military use and not part of civil equipment, for 6A002.a.2 and a.3; DOS jurisdiction for 6D002 for 6A002.b.2.b.1 unless CJ fo DOC; DOS for 6E001 or 6E002 for 6A002.a.1, b.2.b.1, or d.1 unless CJ for DOC; existing USML XII.c infrared focal plane arrays, image intensification tubes, and other night sighting devices for military use even if exported for commercial systems - second and third generation tubes and arrays DOC; USML XV.e Note 8 lists focal plane arrays having more than 2048 elements per array and having a peak response between 300 nm and 900 nm wave length as on the CCL and not included in USML unless for military application; not in proposed USML Category XI)
Delete DOS jurisdiction statements re 6A002.a.1, a.2, a.3, b.2.b.1, d.1, 6D002. 6E001, 6E002; delete XV.e Note 8 and, if significant, include relevant specifications in XII.c;
add to 6A002.a.1, a.2, a.3, and b.2.b.1 “not controlled by USML XII.c;
add to XII.c “(see also 6A002.a.1, a.2, a.3, b.2.b.1)";
(See also 9A620 in Attachment 2.)

6A004.c Specified space-qualified components for optical systems
6A004.d.1 Equipment to maintain surface figure or orientation of 6A004.c.1 or c.3 components
6C004 specified optical materials
6D001 software for development or production of 6A004
6E001 technology for development of 6A004
6E002 technology for production of 6A004
6E003.d.1 optical surface coating and treatment technology to achieve thickness uniformity and low loss (absorption and scatter)
(DOS jurisdiction for 6A004.c and d.1 and 6D001, 6E001, and 6E002 therefor, but not 6C004 or 6E003.d.1; not found in existing USML; not in proposed Category XI)
Delete DOS jurisdiction statements for 6A004.c and d.1 and 6D001, 6E001, 6E002 therefor

6A005 Lasers (DOS jurisdiction for military applications; existing USML XII.b and XV.e Note 9 lasers for military applications; proposed Category XI.a.3.xxix laser radar for missiles and UAVs)
In 6A005, delete DOS jurisdiction for military applications;
add to 6A005 “not controlled by USML XI.a.3.xxix or XII.b;
add technical specifications to XII.b to reduce inherent ambiguity of “military applications”
add to XI.a.3.xxix, XII.b, and XV.e Note “See also 6A005"
(See item 9 in Attachment 1 for more re 6A108 and XV.e Note 9)

6A005.f.3 optical equipment and components for phased-array Super High Power (SHPL) for coherent beam combination to a specified accuracy (DOS jurisdiction for shared aperture elements in SHPL applications per 6A005 Related Controls and 6A005.f N.B.)
Delete DOS jurisdiction in both 6A005 Related Controls and 6A005.f N.B.;
Include “shared aperture elements in SHPL applications (see also 6A005.f.3)” in XII.b additional

technical specifications
add to 6A005.f.3 “not controlled by USML XII.b”

6A103 - see item 15 in Attachment 1

6A108.a - see items 8 and 9 in Attachment 1

6D001 - see 6A004.c and d.1 in Attachment 3

6D002 - see 6A002.b.2.b.1 in Attachment 3

6D003.h.2 - see item 15 in Attachment 1

6D103 software that processes post-flight data for “missiles”
Add “or other rockets or unmanned aerial vehicles having a “range” equal to or better than 300 km” to conform with MTCR 12.D.2
In the absence of a Related Controls section, it is uncertain whether DOS jurisdiction is intended. If not, a cross reference to USML IV.i should be added to 6D103 and a cross reference to 6D103 should be added to USML IV.

6E001 and 6E002 - see 6A002 and 6A004 in Attachment 3

7A005 Global Navigation Satellite Systems ...
These items, when also described in USML Category XV(c), are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls
NS applies to entire entry NS Column 1
MT applies to 7A005 when also described in7A105 MT Column 1
AT applies to entire entry AT Column 1

(If XV when revised does not include coverage overlapping 7A005, then the DoS carve-out from 7A005 should be completely eliminated.)

7A105 Receiving equipment, not controlled by 7A005, for Global Navigation Satellite Systems ... (These items, when also described in USML Category XV(c), are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls)
MT applies to entire entry MT Column 1
AT applies to entire entry AT Column 1

(If XV when revised does not include coverage overlapping 7A105, then the DoS carve-out from 7A105 should be completely eliminated.)

7B103 ~~Specially designed~~ “production facilities” and “production equipment” not controlled by 7B002 or 7B003 for equipment controlled by 7A117 ~~(These items are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. See 22 CFRpart 121.)~~
MT applies to entire entry MT Column 1

AT applies to entire entry AT Column 1

(To conform with MTCR 2.B.1 and 2.B.2. Retransfer to BIS is for consistency with 9B116 and 9B115)

7D002 "Source code" according to the General Software Note for the "use" of any inertial navigation equipment ...
MT applies to ~~entire entry~~ 7D002 when also described in 7D101.
TSR: ~~N/A~~ Yes except MT

7D003 Other "software" according to the General Software Note as follows ...
MT applies to ~~"software" controlled by MT reasons. MT does not apply to "software" for equipment controlled by 7A008~~ 7D003 when also described in 7D101 or 7D102
TSR: ~~N/A~~ Yes except MT

7D102 Integration "software", not controlled by 7D003, according to the General Software Note as follows ...
Related Controls: The "software" ~~related to~~ for the "use" of ~~7A003.b or~~ 7A103.b ~~are~~ is subject to the export licensing authority of the U.S. Department of State

(7D102 does not control software related to 7A003.b.)

7D103 "Software", not controlled by 7D002 or 7D003, ~~specially designed~~ according to the General Software Note for modelling or simulation ... (This entry, when also described in USML Category IV or XV, is subject to the export licensing authority of the U.S. Department of State...)
MT applies to entire entry MT Column 1
AT applies to entire entry AT Column 1

(If IV or XV when revised do not include this 7D103 text from MTCR 16.D.1, then the DoS carve-out from 7A105 should be completely eliminated.)

7E003
MT applies to ~~entire entry~~ "technology" for equipment controlled by 7A001 to 7A004 for MT reasons
TSR: ~~N/A~~ Yes except MT

7E004 Other "technology" according to the General Technology Note as follows ...
MT applies to ~~entire entry except 7E994.a.7~~ 7E004.b.5 when also described in 7E104 or 7E105
TSR: ~~N/A~~ Yes except MT

7E104 Design "technology" according to the General Technology Note not controlled by 7E004.b.5 for the integration of flight control ... for "missiles" ... (This entry, when also described in USML Category IV or VIII or XV, is subject to the export licensing authority of the U.S.Department of State ...)
MT applies to entire entry MT Column 1
AT applies to entire entry AT Column 1

(If IV or VIII or XV when revised do not include this 7E104 text, from MTCR 10.E.2, then the DoS carve-out from 7E104 should be completely eliminated.)

7E105 Design “technology” according to the General Technology Note, not controlled by 7E004.b.5 or by USML Categories IV, VIII, or XV, for integration of air vehicle fuselage, propulsion system and lifting control surfaces for “missile” aerodynamic performance throughout the flight regine.

MT applies to entire entry MT Column 1

AT applies to entire entry AT Column 1

(If IV, VIII, or XV when revised do not include this 7E105 text, from MTCR 10.E.1, then there should be no DOS carve-out from 7E105.)

From: Randy Hartsock [mailto:randy.hartsock@att.net]
Sent: Monday, January 21, 2013 2:10 PM
To: DDTC Response Team
Subject: ITAR Amendment--Category XI and `Equipment.

Hi:

Subject: Proposed ITAR Capacitor Restriction That Seem Unreasonable.

Please review the attached and specifically page 26 of 32 concerning Hi-energy capacitors. **[EDITOR's NOTE: SEE NEXT PAGE FOR REFERENCE]**

Who are they getting their advise from?

Concerning 4i: This 1.3J/cc is not that high an energy density in today's world!

Same comment for 4ii.

Concerning 4iii: A Design Life of 10,000 cycles is no big deal in today's world!

Do they really mean "have ANY of the following:" or do they mean "have ALL of the following" (even with "ALL" incorporated I think this is very restrictive!).

I believe that this ITAR restriction could be very challenging to the manufacturers of capacitors (General Atomics, ICAR, NWL, Hi Energy, CSI, etc....).

Consider voicing your concerns as allowed (see the Doc page 2 of 32).

Best Regards,
Randy Hartsock
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USML, whether in production or development.

(8) Unattended ground sensor (UGS) systems or equipment having all of the following:

(i) Automatic target detection;

(ii) Automatic target tracking, classification, recognition, or identification;

(iii) Self-forming or self-healing networks; and

(iv) Self-localization for geo-locating targets;

(9) Electronic sensor systems or equipment for non-acoustic anti-submarine warfare (ASW) or mine warfare (*e.g.*, magnetic anomaly detectors (MAD), electric-field, and electromagnetic induction);

(10) Electronic sensor systems or equipment for detection of concealed weapons, having a standoff detection range of greater than 45 meters for personnel or detection of vehicle-carried weapons;

(11) Test sets "specially designed" and programmed for testing counter radio controlled improvised explosive device (C–RCIED) electronic warfare (CREW) systems;

(12) Equipment "specially designed" to process or analyze signals from defense articles controlled by this category; or

(13) Direction finding equipment for determining bearings to specific electromagnetic sources or terrain characteristics "specially designed" for defense articles in paragraph (a)(1) of Category IV and paragraphs (a)(5) and (a)(6) of Category VIII (MT).

(b) Electronic systems or equipment "specially designed" for the collection, surveillance, monitoring, or exploitation of the electromagnetic spectrum (regardless of transmission medium), for intelligence or security purposes or for counteracting such activities. This includes:

(1) Non-cooperative direction finding systems that have an angle of arrival (AOA) accuracy better than (less than) two degrees RMS and are not "specially designed" for navigation;

(2) Such systems or equipment that use burst techniques (*e.g.*, time compression techniques);

(3) Systems and equipment "specially designed" for measurement and signature intelligence (MASINT);

(4) Technical surveillance counter-measure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum that:

(i) Sweep or scan speed exceeding 250 MHz per second;

(ii) Have instantaneous bandwidth exceeding 110 MHz;

(iii) Have built-in signal analysis capability;

(iv) Have a volume of less than 1 cubic foot;

(v) Record time-domain or frequency-domain digital signals other than single trace spectral snapshots; and

(vi) Display time-vs-frequency domain (*e.g.*, waterfall or rising raster).

(c) Parts, components, accessories, attachments, and associated equipment, as follows:

(1) Application specific integrated circuits (ASIC) for which the functionality is "specially designed" for defense articles in this subchapter;

(2) Printed circuit boards or patterned multichip modules for which the layout is "specially designed" for defense articles in this subchapter;

(3) Transmit/receive modules or transmit modules that have any two perpendicular sides, with either length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz [$d \leq 15cm * GHz / f_{GHz}$], that incorporate a MMIC or discrete RF power transistor and a phase shifter or phasers;

(4) High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have any of the following:

(i) Volumetric energy density greater than or equal to 1.3 J/cc;

(ii) Mass energy density greater than or equal to 1.1 kJ/kg; or

(iii) Full energy life greater than or equal to 10,000 discharges;

(5) Radio frequency circulators of any dimension equal to or less than one quarter (¼) wavelength of the highest operating frequency and isolation greater than 30dB;

(6) Polarimeter that detects and measures polarization of radio frequency signals within a single pulse;

(7) Digital radio frequency memory (DRFM) with RF instantaneous input bandwidth greater than 400 MHz, and 4 bit or higher resolution and "specially designed" parts and components therefor;

(8) Vacuum electronic devices, as follows:

(i) Multiple electron beam or sheet electron beam devices rated for operation at frequencies of 16 GHz or above, and with a saturated power output greater than 10,000 W (70 dBm) or a maximum average power output greater than 3,000 W (65 dBm); or

(ii) Cross-field amplifiers with a gain of 15 dB to 17 dB or a duty factor greater than 5%;

(9) Antenna, and "specially designed" parts and components therefor, that:

(i) Electronically steer angular beams and nulls with four or more elements;

(ii) Form adaptive null attenuation greater than 35 dB with convergence time less than 1 second;

(iii) Detect signals across multiple RF bands with matched left hand and right hand spiral antenna elements for determination of signal polarization; or

(iv) Determine signal angle of arrival less than two degrees (*e.g.*, interferometer antenna);

(10) Radomes or electromagnetic antenna windows that:

(i) Incorporate radio frequency selective surfaces (MT);

(ii) Operate in multiple or more non-adjacent radar bands (MT);

(iii) Incorporate a structure that is "specially designed" to provide ballistic protection from bullets, shrapnel, or blast (MT);

(iv) Have a melting point greater than 1,300 °C and maintain a dielectric constant less than 6 at temperatures greater than 500 °C (MT);

(v) Are manufactured from ceramic materials with a dielectric constant less than 6 at any frequency from 100 MHz to 100 GHz (MT);

(vi) Maintain structural integrity at stagnation pressures greater than 6,000 pounds per square foot (MT);

(vii) Withstand combined thermal shock greater than 4.184×10^6 J/m² accompanied by a peak overpressure of greater than 50 kPa (MT); or

(viii) Are configured to blend with the external geometry of end-items controlled in Category IV (MT);

(11) Underwater sensors (acoustic vector sensors, hydrophones, or transducers) or projectors "specially designed" for systems controlled by paragraphs (a)(1) and XI(a)(2) of this category, having any of the following:

(i) A transmitting frequency below 10 kHz;

(ii) Sound pressure level exceeding 224 dB (reference 1 µPa at 1 m) for equipment with an operating frequency in the band from 10 kHz to 24 kHz inclusive;

(iii) Sound pressure level exceeding 235 dB (reference 1 µPa at 1 m) for equipment with an operating frequency in the band between 24 kHz and 30 kHz;

(iv) Forming beams of less than 1° on any axis and having an operating frequency of less than 100 kHz;

(v) Designed to operate with an unambiguous display range exceeding 5,120 m; or

(vi) Designed to withstand pressure during normal operation at depths exceeding 1,000 m and having transducers with any of the following:

(A) Dynamic compensation for pressure; or

AIRBUS

January 24, 2013

Directorate of Defense Trade Controls
U.S. Department of State
PM/DDTC, SA-1, 12th Floor
2401 E Street, NW
Washington, D.C. 20037

Re: RIN 1400–AD25 [Public Notice: 8091]: Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for ''Equipment''

This letter is submitted by Airbus Americas Inc. on behalf of itself and its ultimate parent company Airbus SAS (hereafter collectively referenced as "Airbus") in response to the request for comments published in the Federal Register on November 28, 2012 in the above-referenced public notice (the "Proposed Rule"). Airbus has consulted with its ultimate parent company EADS in the preparation of these comments.

Airbus is the prime contractor for the development and production of the A400M, a four-engine turboprop military transport aircraft that incorporates a large number of U.S.-origin components. Among those components are military electronics within Category XI, and therefore the proposed rule potentially will have an important impact on production, service, and training activities involving the A400M. The prior proposed rules relating to control of aircraft and related items (published in the November 7, 2011 Federal Register) and gas turbine engines and related items (published in the December 6, 2011 Federal Register) will also affect the A400M program. Currently, U.S. exports of components for use in the A400M program are managed under the authority of hundreds of licenses, technical assistance agreements and warehouse distribution agreements issued by the State Department's Directorate of Defense Trade Controls (DDTC).

The above-referenced notice includes the following statement:

> (2) The key goal of this rulemaking is to establish a "bright line" between the USML and the CCL for the control of these materials. The public is asked to provide specific examples of military electronics whose jurisdiction would be in doubt based on this revision.

Airbus is submitting these comments to address an issue that will arise from the transfer of jurisdiction over items from the ITAR to the EAR that will impede the establishment of a "bright line" between the USML and the CCL.

Specifically, the proposed transfer of certain items from the jurisdiction of the ITAR to the EAR contained in the Proposed Rule and in prior related proposed rules have not addressed in detail the relationship between the EAR and the ITAR's regulation of "defense services." Airbus is concerned that there will remain an overlap in jurisdiction that will have the effect of requiring U.S. exporters to obtain licensing authority from DDTC to provide support services relating to 600 series items on the CCL.

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The background is as follows. The ITAR's definition of "defense service" includes in pertinent part:

> (1) The furnishing of assistance (including training) to foreign persons, whether in the United States or abroad in the design, development, engineering, manufacture, production, assembly, testing, repair, maintenance, modification, operation, demilitarization, destruction, processing or use of defense articles. …[1]

Since all technical activities related to defense articles are already covered by the Technical Assistance Agreements (TAAs) approved by DDTC to which Airbus and its U.S. suppliers are parties, this broad definition has not imposed special burdens on the A400M program. Upon the shifting of jurisdiction over the 600 series items to the EAR, however, this definition of "defense service" would require Airbus' U.S. suppliers to maintain all of their existing TAAs, even if they obtain EAR licenses for exports of the items and related technology. That is because, in Airbus' experience, this definition is applied to cover technical activities related to any end product that is a defense article. In other words, a U.S. supplier assisting in the maintenance, repair, installation or integration of an item into a military aircraft (or other military end products, such as a tank) currently are deemed to be providing a defense service.

DDTC previously proposed to change the scope of "defense service" in a proposed rule published on April 13, 2011.[2] In that proposed rule, DDTC proposed to revise the definition of "defense service" in pertinent part as follows:

> (1) The furnishing of assistance (including training) using other than public domain data to foreign persons (see § 120.16 of this subchapter), whether in the United States or abroad, in the design, development, engineering, manufacture, production, assembly, testing, intermediate or depot level repair or maintenance (see § 120.38 of this subchapter), modification, demilitarization, destruction, or processing of defense articles (see § 120.6 of this subchapter); or
>
> (2) The furnishing of assistance to foreign persons, whether in the United States or abroad, for the integration of any item controlled on the U.S. Munitions List (USML) (see § 121.1 of this subchapter) or the Commerce Control List (see 15 CFR part 774) into an end item (see § 121.8(a) of this subchapter) or component (see § 121.8(b) of this subchapter) that is controlled as a defense article on the USML, regardless of the origin ….

The April 13, 2011 proposed rule also stated that the following would not be considered a defense service:

> (1) Training in the basic operation (functional level) or basic maintenance (see § 120.38) of a defense article;
>
> * * *

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1 22 CFR § 120.9(a).

2 DDTC, Proposed Rule, 76 Fed. Reg. 20590 (April 13, 2011).

> (3) Testing, repair, or maintenance of an item "subject to the Export Administration Regulations" (see 15 CFR 734.2) administered by the Department of Commerce, Bureau of Industry and Security, that has been incorporated or installed into a defense article ….

Under this proposed rule as applied to 600 series items, there would be a distinction between services that related to "incorporation" or "installation" – which apparently would not be a defense service – and those that relate to "integration" – which would be a defense service. Although these terms are not defined in the proposed rule itself, DDTC provided the following explanation in the preface to the proposed rule:

> … "installation" means the act of putting something in its pre-determined place and does not require changes or modifications to the item in which it is being installed (*e.g.*, installing a dashboard radio into a military vehicle where no changes or modifications to the vehicle are required; connecting wires and fastening the radio inside of the preexisting opening is the only assistance that is necessary). "Integration" means the systems engineering design process of uniting two or more things in order to form, coordinate, or blend into a functioning or unified whole, including introduction of software to enable proper operation of the device. This includes determining where to install something (*e.g.*, integration of a civil engine into a destroyer which requires changes or modifications to the destroyer in order for the civil engine to operate properly; not simply plug and play).[3]

In the case of the A400M, many of the U.S. suppliers previously have been engaged in activities meeting this definition of "integration." But Airbus foresees many circumstances in which the distinction between "integration" and "installation" may not be clear, especially when the end item is still under development.

A further problem is that it is not always possible to predict with certainty when an integration issue will arise. For example, a service technician engaged in an installation might offer a suggestion for improving cabling or another type of modification to how the item is physically installed. In that circumstance, an activity that was expected to be only "installation" (and therefore not a defense service) potentially would become "integration" (and therefore a defense service).

Similarly, the proposed rule would distinguish between "basic-level maintenance", on the one hand, and "intermediate-level" and "depot-level" maintenance on the other. Although those terms are defined in the proposed rule, each of the definitions uses the words "repair," "calibration," and "testing", and each refers to replacement of parts.[4] Companies and engineers may not be able to determine with certainty when an activity is sufficiently significant to pass from being "basic-level" to "depot-level." Similarly, a repair might start out as being for "on-equipment," but during the repair the technician might decide that the equipment should be removed (becoming "off-equipment") in order to finish the work properly.

---

[3] 76 Fed. Reg. at 20591.

[4] Under the proposed rule, "Basic-level maintenance" (also referenced as "organizational-level maintenance") applies to "on-equipment" and would include: "repair, inspecting, servicing, or calibration, testing, lubricating and adjusting equipment, as well as replacing minor parts, components, assemblies and line-replaceable spares or units." "Intermediate-level maintenance" applies to "off-equipment" and would include "[c]alibration, repair, or testing and unserviceable parts, components, or assemblies". "Depot-level maintenance" would include "[i]nspection, testing, calibration or repair, including overhaul, reconditioning and one-to-one replacement of any defective items, parts or components."

It is Airbus' expectation that, in practice, companies will choose to maintain existing TAAs, or obtain new ones, in order to ensure that their servicing activities are "safely" covered by an ITAR authorization. Companies will not wish to risk adopting an interpretation with which the U.S. Government may later disagree.

Accordingly, under both the current regulations and the proposed amendment to the definition of "defense service," U.S. suppliers of 600 series items for the A400M would need to maintain both ITAR and EAR authorizations for exporting the same products and technical data, and Airbus would need to maintain compliance with both sets of regulations in relation to those items. The result would be a licensing system that will be potentially more cumbersome than the one currently in place, with an increased risk of confusion.

For these reasons, Airbus proposes that, as part of the export control reform process and implementation of the shifts in jurisdiction, consideration be given to modifying the scope of "defense service," at least with respect to 600 series items, so that all technical activities relating to such items would be subject exclusively to the EAR. Such a clarification is vital to achieving the goal of establishing a "bright line" between the USML and the CCL.

Respectfully submitted,

Kenneth G. Lyons
Director, Export & Trade Compliance
Airbus Americas, Inc.

cc: GRX

WESTAK

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January 24, 2013

Ms. Candace Goforth
Director, Office of Defense Trade Controls Policy
Directorate of Defense Trade Controls
US Department of State
2201 C Street, NW
Washington, DC 20520

VIA EMAIL: DDTCResponseTeam@state.gov

Re: Amendment to the International Traffic in Arms Regulations (ITAR): Revision of U.S. Munitions List Category XI and Definition for ''Equipment'' (Federal Register Docket ID. 2012–28806, RIN 1400–AD25)

Dear Ms. Goforth,

Westak, Inc., a printed circuit board manufacturer with facilities in California and Oregon, appreciates the opportunity to comment on the above referenced rulemaking.

Westak joins its industry peers and its trade association, IPC – Association Connecting Electronics, in commending the State Department for its decision to enumerate printed circuit boards (PCBs) in paragraph (c)(2) of the proposed rule for US Munitions List (USML) Category XI. The explicit enumeration of PCBs on the USML is an important and meaningful step toward providing the regulatory clarity necessary to curb the unlicensed sourcing of ITAR-controlled PCBs from non-ITAR facilities.
As IPC has explained in comments to previously released category revisions, the unlicensed sourcing of PCBs is a serious threat to national security because it provides our adversaries detailed information about the printed boards and the defense articles for which those boards have been designed. The enumeration of PCBs on the USML will better safeguard national security by helping to address the industry confusion that has inadvertently led to the unlicensed sourcing of ITAR-controlled PCBs from non-ITAR facilities.

Westak, however, is concerned that the regulatory clarity the enumeration of PCBs in paragraph (C)(2) seeks to achieve is undermined in the same paragraph by the State Department's decision to rely on "specially designed" as the principal means of controlling PCBs. The use of "specially designed" unnecessarily perpetuates confusion about the nature of printed boards and their treatment under ITAR. The use of "specially designed," for example, could be misinterpreted to mistakenly affirm the existence of commercial off the shelf PCBs. Every PCB, in fact, is designed specifically for its end-item. Moreover, the proposed rule will require exporters to consider and correctly apply "specially designed," the definition for which largely does not apply to PCBs. In practice, the only applicable definitional element of "specially designed" for PCBs is paragraph (a)(2) of the definition, which captures parts and components "necessary for an enumerated defense article to function as designed." In short, "specially designed" in paragraph (c)(2) adds confusion to what should be a clear and focused articulation of controls on PCBs.
Given these concerns, Westak urges the State Department to adopt alternative language proposed by IPC in their comments to the State Department on Category XI. IPC has recommended the following:

> **Modify paragraph (c)(2) to control "Printed circuit boards and patterned multichip modules which, as a result of development, are necessary for defense electronics to function as designed, other than printed circuit boards determined to be subject to the EAR as a result of a commodity jurisdiction determination."**

IPC's proposed language seeks to maintain the State Department's intended level of control, but in a clear and unambiguous manner. Most importantly, the proposed language retains the State Department's enumeration of PCBs on the USML, but it replaces the reference to "specially designed" with the term's single definitional element that pertains to PCBs: paragraph (a)(2) of the definition capturing, under ITAR, parts and components "necessary for an enumerated defense article to function as designed." Integrating this definitional element into the language of Category XI will help address confusion that would certainly result from the use of "specially designed."

In addition to the enumeration of PCBs on the USML, Westak also encourages the State Department to provide additional, explicit clarification of the unique nature of PCBs in the preamble or a note to the final rule. Exporters and manufacturers must understand that all PCBs, by their nature, are uniquely designed for the electronic products into which they are installed. Failure to understand this fact will likely lead to the misapplication of any qualifier the State Department chooses to employ in paragraph (c)(2) of the rule.

Westak thanks you for your thoughtful consideration of its views.

Sincerely,

Deborah Hall
Director of Business Services

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Office of Defense Trade Controls Policy
U.S. Department of State
PM/DDTC, SA-1, 12th Floor
2401 E Street, NW
Washington, DC 20037

Attention: Ms. Candace M. J. Goforth, Director Office of Defense Trade Controls Policy

RE: ITAR Amendment – Category XI and "Equipment"

Dear Ms. Goforth,

On November 28, 2012, the U.S. Department of State published proposed revisions to United States Munitions List Category XI b (4) (Federal Register, Vol. 77, No. 229). That notice invited comments from interested parties. Research Electronics International (REI), a U.S. company specializing in electronic test equipment, offers the following comments on the proposed rule regarding spectrum analyzers.

The relevant text is included here for ease of reference:

Technical surveillance countermeasure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum that:

(i) Sweep or scan speed exceeding 250 MHz per second;
(ii) Have instantaneous bandwidth exceeding 110 MHz;
(iii) Have built-in signal analysis capability;
(iv) Have a volume of less than 1 cubic foot;
(v) Record time-domain or frequency-domain digital signals other than single trace spectral snapshots; and
(vi) Display time-vs.-frequency domain (e.g., waterfall or rising raster).

Most of these specifications – the sweep speed, built-in signal analysis capability, physical size, recording and waterfall functions – are commonplace in modern commercial spectrum analyzers. Even collectively, their inclusion seems outdated and inappropriate and should be removed. The two exceptional features among them – exceptional only when taken together – are the relatively small unit size and the large instantaneous bandwidth. Apparently the State Department has singled the combination of the two out as the demarcation point for when control is warranted.[1]

The problem this creates is that, given the rate of advancement in the field, within the next few years, commercial spectrum analyzers crossing that demarcation point will be the norm.

Manufacturers across the globe will be making analyzers smaller than a cubic foot with instantaneous bandwidths exceeding 110 MHz in relatively short order. U.S. manufacturers, however,

[1] Right now, the Agilent N9030A (U.S.-origin), the Anritsu MS2830A (Japanese), the Rhode & Schwartz FSQ and FSW (German), and the Tektronix RSA6000 (U.S.) all meet or exceed a 110 MHz instantaneous bandwidth, but are larger than one cubic foot. Consequently, the proposed Category XI revision would exclude them from control.

will be forced to manufacture equipment that is either larger than a cubic foot or featuring a bandwidth narrower than 110 MHz to avoid defense article designation and the attendant export limitations. Foreign manufacturers, of course, will have no such hindrance. The competitive imbalance will make itself apparent in sales disparities, with U.S. manufacturers on the losing side of the divide and no obvious national security concern to justify the inequity.

While the Department could regularly update the spectrum analyzer control criteria to reflect new developments in the field, this would impose an unnecessary, time-consuming, and likely unwanted burden on the government. U.S. manufacturers would also find themselves constantly waiting for the regulations to change before scrambling to catch up with foreign competitors. Although there are already commercial applications and products with high instantaneous bandwidths, **it would be far more efficient for everyone involved if the State Department simply (1) increased the proposed instantaneous bandwidth specification, and (2) removed the product size constraint altogether**. In other words, the Department should make a spectrum analyzer's instantaneous bandwidth the primary determining factor in whether it is considered a defense article, and set the threshold control measurement high.

Aside from the above recommendation, if the proposed criteria are implemented, REI believes that some clarification is required.

First, "built-in signal analysis capability" is a term of art that shifts based on contextual variables. As used in sub-provision (iii), does it mean AM or FM demodulation, digital demodulation, a graph of the signal frequency spectrum, indication of signal power, or something else? Without clear definitions, the phrase creates ambiguity. The same is true of sub-provision (v), regarding digital signal recording. Most spectrum analyzers have multiple forms of recording capability, including recording demodulated analog signals, frequency spectrum data, screen shots of graphics displays, and I&Q time domain data. Does this sub-provision refer to all of these common types of data recording? Does it mean that a spectrum analyzer can only record a total of one spectral snapshot, or can it record many, so long as they are not in a continuous waterfall format? REI suggests that both of these criteria, which relate to common commercial technology, should be defined in greater detail or removed altogether, lest they inadvertently cause confusion.

As the above analysis and recommendations suggest, imposing a standard export control framework onto contemporary spectrum analyzer equipment is awkward at best. The variance in features, the contextual variability of specifications, and the rate of technical advancement simply don't lend themselves to clean, unambiguous regulation.

A more administrable rule would take protecting U.S. government communications as its primary aim, and hold that **a spectrum analyzer is not considered a defense article subject to ITAR control so long as it does not have the ability to perform decryption above some specified level.**[2] This simple rule acknowledges the reality that U.S.-made spectrum analyzer technology simply does not pose any plausible national security risk necessitating ITAR control because (1) while many common commercial spectrum analyzers can *detect* sophisticated modulation and encrypted RF transmissions, they cannot actually extract information from the communications, and (2) if mere detection is in fact the primary national security concern, foreign manufacturers are already making

[2] As we understand it, government-level surveillance communications are encrypted in sophisticated digital modulations schemes and, for the most part, are practically impossible to decrypt with any existing spectrum analyzer technology.

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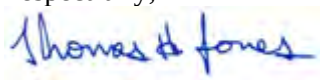
commercially-available spectrum analyzers with detection capabilities equal to or exceeding those of U.S. counterpart equipment, so controlling the latter will achieve nothing beyond harming U.S. manufacturer sales abroad and employment opportunities at home.

A straightforward decryption-based spectrum analyzer rule of the sort mentioned above would ensure that foreign competitors do not gain an unfair advantage over U.S. manufacturers due to outmoded regulations failing to keep pace with rates of technological advancement and dissemination. Failing adoption of this proposed decryption rule, however, REI believes that implementing the above recommendations on improving the proposed Category XI revision would go a long way toward achieving that same end.

Thank you in advance for considering REI's opinions and suggestions.

Respectfully,



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Office of Defense Trade Controls Policy
PM/DDTC, SA-1, 12th Floor
2401 E Street, NW
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ATTN: Candace M. J. Goforth
Director, DTC Policy

Re: **Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment"**

Dear Ms. Goforth:

Globecomm Systems Inc. ("Globecomm") respectfully submits these comments in response to the November 28, 2012 notice published by the U.S. Department of State, Directorate of Defense Trade Controls ("DDTC") proposing amendments to the International Traffic in Arms Regulations ("ITAR"). See "Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for „Equipment,'" 77 Fed. Reg. 70,958 (Nov. 28, 2012). Globecomm appreciates this opportunity to provide comments on the proposed revisions to the U.S. Munitions List ("USML") Category XI (military electronics).

I. Summary of Comments

Globecomm supports the President's Export Control Reform Initiative efforts to develop a positive list of controlled military electronics with a "bright line" between the USML and the Commerce Control List ("CCL"). Globecomm's comments on DDTC's proposed amendments are summarized as follows:

- Globecomm suggests that proposed Category XI(c)(16) should be eliminated, as it is overly vague and broad in its use of design-intent criteria.

- If proposed Category XI(c)(16) remains, it should be revised such that configuration of a communications device to function within a particular operating frequency does not, by itself, render the device "specially designed"[1] for military application.

[1] For purposes of this notice of proposed rulemaking, DDTC has directed reviewers to reference the proposed definition of "specially designed" as set forth in 77 Fed. Reg. 26,428 (June 19, 2012).

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- The proposed rule should clarify that equipment controlled under Category XI(a)(5) must meet all of the C^3, C^4, or C^4ISR elements. This section should expressly exclude equipment that performs only a communications function.

- Globecomm strongly supports the proposed revision to Category XI(a)(7), which links developmental electronics to U.S. Department of Defense ("DoD") funding, and which provides an exclusion where a DoD contract has identified the item as having both civil and military applications.

- Proposed USML Category XI(a)(12) should define the phrase "process or analyze signals," and the definition should exclude transmission and reception of data or communications.

II. Globecomm Background

Globecomm, a U.S. company headquartered in New York, with approximately 500 employees, is a leading global provider of managed network communication solutions. The satellite-based communications products and services that Globecomm offers include pre-engineered systems, systems design and integration services, managed network services and life cycle support services. Globecomm's customers include communications service providers, commercial enterprises, broadcast and other media and content providers, and government and government-related entities. For more information about Globecomm, please see: www.globecommsystems.com.

The proposed revisions to USML Category XI would impact several of the products and services Globecomm provides. While Globecomm encourages the development of a more positive list for military electronics, certain aspects of this proposed rule present concerns. Specifically, the proposed rule could have the effect of inadvertently capturing products that are inherently dual use. Many U.S. companies in the electronics sector, in order to remain economically competitive in the global market, need to develop products that can be configured for performance in civilian and military applications. For example, frequency bands historically designated for military satellite communications (e.g., X-band) are increasingly becoming commercialized, and it is common for manufacturers to offer products that cover a range of frequencies or that can be configured to different frequencies based on customer specification. In such cases, it is typical for communications systems set at frequencies used by military customers to be assembled with commercial-off-the-shelf ("COTS") equipment.

Globecomm respectfully suggests that, in the spirit of export control reform, USML Category XI should explicitly exclude communications systems and equipment that have been configured for operational compatibility within military systems (e.g., frequency setting), but which are comprised of commercial equipment and which perform essentially civilian functions. Otherwise, the regulation would put U.S. companies at a disadvantage with foreign companies who are able to sell such products without restriction.

III. Globecomm's Comments

A. Proposed Category XI(c)(16) Uses Overly Broad, Design-Intent Criteria

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Globecomm is pleased to see Category XI(c) expanded into a list with items enumerated in specific detail; however, Globecomm is deeply concerned about removal of the caveat "except for such items as are in normal commercial use." That change, combined with the overly broad control parameters of the proposed new paragraph (c)(16) to Category XI, could have the effect of unintentionally pulling dual use items into the controls of the USML.

Globecomm would recommend eliminating the proposed new paragraph (c)(16) altogether. The language is vague and defaults to the design-intent language that the USML revisions are supposed to eliminate: "specially designed" and "modify or customize." DDTC's proposed new definition of "specially designed" might help to mitigate the removal of the commercial items caveat for Category XI(c). However, the language of proposed paragraph (c)(16) risks capturing electronic parts that have been configured for compatible operation within a military system, regardless of their commercial availability.

B. Frequency Configuration Alone Should Not Make an Item ITAR-Controlled

Should DDTC decide to keep Category XI(c)(16), Globecomm suggests that the reference to "operating frequencies" be struck, as follows:

> "(16) Parts, components, or accessories „specially designed' to modify or customize the properties (*e.g.,* ~~operating frequencies,~~ algorithms, waveforms, CODECs, or modulation/demodulation schemes) of a radio or information assurance/information security article controlled in this subchapter beyond what is specified in the public domain or the published product specifications;"

Rather, the language should be revised to clarify that configuration for operating frequencies alone does not render an item "specially designed" and, thus, subject to control under the USML. Globecomm recommends that DDTC insert the following language at the end of Category XI(c):

> "**Note 1 to Paragraph (c):** Paragraph (c) does not control parts, components, or accessories in normal commercial use, which have been modified or customized for compatibility with operating frequency."

Radio frequencies historically have been allocated by the U.N.'s International Telecommunication Union ("ITU") and the U.S. Federal Communications Commission ("FCC") for the purpose of establishing an orderly system whereby certain bandwidths do not get over-crowded. It is a method of allocating public resources. It is common for a frequency historically designated for military use, such as X-band, to be sandwiched in between two bandwidths that are traditionally commercial, such as the C-band and Ku-band. Even within a particular bandwidth, such as X-band or Ka-band, there could be multiple applications. An essentially civilian device, which performs standard transmit and receive functions and which is comprised of COTS parts and components, should not be ITAR-controlled simply because its radio frequency is configured for compatibility with a military-operated communications system.

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To capture economies of scale and to remain competitive in a tight global market, manufacturers of communications systems often need to make generic items that can be configured, per customer specification, to operate at one of many frequency bands. There are often dozens of variations of frequency configurations for each type of system, and manufacturers cannot offer every variation for every type of system. Thus, as a standard industry practice, manufacturers will design a system that can swap out identical parts with different frequency modules for transmission and reception of data and communications signals. In such cases, the frequency setting does not change the technical functionality or performance capabilities of the underlying equipment. Nor is a special level of technology or skill required to set the communications device at one frequency versus another.

Moreover, DDTC's proposed USML Category XI(c)(16) would codify outdated thinking about the X-band and Ka-band frequencies, or other frequencies historically designated for military usage, which have since been opened up for commercial application. For example, a commercial satellite space provider, XTAR LLC, offers X-band capacity for commercial and government use.

To that end, there have been numerous CJ rulings issued declaring X-band and Ka-band components Commerce-controlled on the CCL or as EAR99. The chart below lists some recent determinations. Thus, pulling items into the USML on the basis of frequency configuration alone could have the effect of increasing controls rather than reforming controls.

Model Name	Manufacturer	Description	CJ Determination	Date
Raptor 45 cm X-band USAT (Version 1)	Integral Systems Inc. (Satcom Solutions division)	Portable Ultra Small Aperture Terminal for Satellite Communications	ECCN 5A991.g.	06/24/2011
LB61 Series X-Band Low Noise Block Down Converter (LNB) X-Band Series	Locus Microwave	High Frequency Low Noise Block Down Converter	ECCN 5A991.g.	07/14/2011
Auto-Explorer Ka-band AUTOXKAC-1.2	Globecomm Systems Inc.	Portable communication terminal - sends and Receive data signals via Ka-band satellite	ECCN 5A002	09/06/2011
X-Band Low Noise Amplifiers L61000 Series	Locus Microwave Inc.	High Frequency Low Noise Amplifiers	EAR99	09/21/2011

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40 Watt Ka-Band Block Up Converter 01-323A	EM Solutions Pty Ltd.	40 Watt Ka-Band BUC	EAR99	10/18/2011
X-Band Feed Assembly 10A0100 & 12A0100	Overwatch Systems, Ltd.	X-band feeds that are used on GATR Technologies' deployable SATCOM antennas	ECCN 5A991	11/23/2012

C. Proposed Category XI(a)(5) Should Expressly Exclude Equipment That Performs Only a Communications Function

Globecomm supports amending proposed Category XI, paragraph (a)(5) to enumerate a positive list of command, control and communications (C^3) and other communications-related systems or equipment. This level of detail focuses the rule on communications systems with unique military capability that incorporate features not in normal commercial use. Globecomm recommends two adjustments to the proposed language to clarify this point.

First, Globecomm requests the addition of a note at the end of paragraph XI(a)(5) stating that systems or equipment must meet all of the C^3, C^4, or C^4ISR elements to be controlled under this paragraph. Systems or equipment that only perform a communications function − without the additional command and control, or intelligence, surveillance and reconnaissance elements − are inherently civilian and should be unambiguously excluded from ITAR control. Suggested language is as follows:

> "**Note to Paragraph (a)(5):** Paragraph (a)(5) does not control systems or equipment that perform only a communications function, including the transmission and reception of communications signals and data."

Second, Globecomm suggests that proposed sub-paragraph (a)(5)(i) could be clarified to define what is meant by: "„specially designed' to integrate, incorporate, network or employ defense articles controlled in this subchapter." This language raises the same concern as with regard to paragraph XI(c)(16) discussed above. Namely, would the configuration of fundamentally civilian equipment, for compatibility with the operating frequency of a military communications system, mean that the equipment has been specially designed and thus subject to ITAR control? For the same reasons cited above, Globecomm recommends that configuration for operating frequency alone should not trigger the controls of Category XI. Globecomm requests that DDTC consider amending the reference to "specially designed" in sub-paragraph (a)(5)(i) to add the following limitation:

> "(i) C^3, C^4, and C^4ISR systems „specially designed', <u>other than for frequency configuration</u>, to integrate, incorporate, network, or employ defense articles controlled in this subchapter;"

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D. Globecomm Supports the Narrower Scope of Proposed Category XI(a)(7)

Globecomm strongly supports the proposed revision to Category XI, paragraph (a)(7). The linkage of developmental electronics to DoD funding, while excluding items which a DoD contract has identified as having both civil and military applications, keeps the focus on products specifically designed for military application.

E. Proposed Category XI(a)(12) Should Define the Phrase "Process or Analyze Signals"

Proposed Category XI, paragraph (a)(12) is unclear as to the meaning of the phrase "process or analyze signals." Globecomm recommends that DDTC define the phrase "process or analyze signals" and limit the definition to state: "not including the transmission or reception of voice, video, data or other communications signals."

The proposed rule could have the unintended effect of controlling products that are essentially civilian. Under the proposed rule, the question arises whether any communications equipment that is configured to operate with a military system is "specially designed" to process or analyze signals from that system. For example, it is unclear whether transmitting and receiving data from a military system could be considered "processing" or whether using network management systems for monitoring and control to ensure that there is no disruption to the transmit/receive process could be considered "analyzing." Such activities are an essentially civilian function, and the equipment itself could be comprised entirely of COTS components. However, Globecomm is concerned that the broad scope of the phrase "process or analyze signals" could be construed to subject ITAR control to any communications equipment used by a military customer. Globecomm strongly urges DDTC to clarify the definition and scope of the phrase "process or analyze signals" in proposed Category XI, paragraph (a)(12).

* * *

Globecomm appreciates this opportunity to submit these comments for consideration. We would welcome the opportunity to answer any questions DDTC may have concerning the issues raised in these comments.

Respectfully submitted,

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January 28, 2013

Subject: Request for Comments: Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment"

Reference: 77 FR 70958, November 28, 2012, Public Notice 8091

Dear Ms. Goforth:

Non-Intrusive Inspection Technology (NIITEK), Inc., a CHG Group Company, submits the following comments for the aforementioned proposed rule. NIITEK appreciates the opportunity to comment on the policy changes proposed by the State Department for the reduction of controls outlined in Category XI for military electronics. The reform effort given by the administration and all the agencies involved is greatly appreciated.

In reference to the three areas the U.S. Government seeks input; NIITEK is providing comments for the first two topics.

(1) 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 the Munitions List Category 11 (WA-ML11). The public is asked to identify any potential lack of coverage brought about by the proposed rules for Category XI contained in this notice and the new Category 3 ECCNs published by the Department of Commerce.

Upon review of the intent to ensure coverage of WA-ML11, the proposed rule appears to be comprehensive with the intent meet this criterion. Where the proposed rule and purpose description fails to be clear, is where products covered by other categories of the Wassenaar Arrangement that had fallen under the USML Category XI, are to be classified. Case in point, current USML classification XI(a)(3)(v)- Military Electronic equipment, radar systems with capabilities such as imaging radar systems, is covered by the Wassenaar Arrangement under ML15.e, Imaging or countermeasure equipment, specially designed for military use, imaging radar sensor equipment. The new Category XI(a)(3) includes radar systems and equipment to great detail for all the alternative sub-categories; however, there is no delineation specific for imaging radar systems. Please clarify if imaging radar systems will be controlled under an alternative USML category yet to be released for public comment or provide a clear direction for the transition for this sub-category.

When evaluating the proposed rule in perspective of parts, components, accessories, attachments, and associated equipment for imaging radar systems, per the guidance provided in the proposed rule to refer to the definition of "specially designed" as provided in Public Notice 7921. The definition of "specially designed" presented multiple interpretations within the organization after presenting the proposed rule to a variety of functional departments. If the intent is to be clear for classification purposes, the definition requires additional review in order to provide a consistent message across a larger spectrum of industry.

The five paragraph (b) exclusions are written to release a part, component, accessory, or attachment from the U.S. Munitions List "catch-all" paragraph. Paragraphs (1)-(3) are very clear in their intent and application. Paragraphs (4) and (5) raise a question to the definition of "reasonable expectation" within the context of the exclusion. The principle in ITAR §120.3, a commodity should be ITAR controlled if it does not have a predominant civil application or does not have a performance equivalent to a commodity used for civil application, seems to be in conflict with the reading of these two paragraphs. Under paragraph (4) if the article in question is developed with a "reasonable expectation of use in or with" USML defense articles and non-USML defense articles, it is released from the catch all bucket. An article can have a dual use, yet a predominant use in the USML defense article and not be controlled under the ITAR if one follows the proposed regulation. Under paragraph (5) an article can be developed with no "reasonable expectation" for a particular application; the commodity is then determined to be an enhancement for a USML defense article, but not controlled under ITAR when classified in line with the proposed rule.

It appears from this notice that the intent during development can conflict with a product's life cycle progress. The term "reasonable expectation" casts a degree of interpretation for companies to manage and a compliance risk to mitigate if a company's definition of reasonable is more liberal than the State's unwritten definition. With the goal of a clean and clear set of regulations governing the classification of defense articles and related commodities, this term requires additional definition.

(2) The key goal of this rulemaking is to establish a "bright line" between the USML and the CCL for the control of these materials. The public is asked to provide specific examples of military electronics whose jurisdiction would be in doubt based on this revision.

NIITEK agrees that the USML and the CCL drive a clear line for controls for those items that are detailed between the two lists for this category under the proposed rule. As discussed under the previous topic, there lacks a clear transition for those items that were specifically covered under the USML Category XI and are no longer enumerated under the proposed regulations. Imaging radar systems that do not meet the specified criteria under the proposed Category XI appear to fall into the USML if their purpose is enumerated. If for imaging radar systems the Munitions List category is yet to be described, and this category

falls under a similar category within the USML or falls to the CCL, it would be worthwhile notating this information.

NIITEK recognizes that DDTC and its fellow agencies have invested a considerable amount of time and effort in developing the proposed regulations with the goal of sustainable export control reform enhancements. We look forward to the final rule and appreciate the opportunity to provide these comments.

Please do not hesitate to contact me if you have any questions or need additional information. I can be reached at 703-574-6069 or via email at josten@niitek.com.

Kind Regards,

Jonathon Osten
Export Officer

January 28, 2013

Sent via email to: DDTCResponseTeam@state.gov

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
ATTN: Regulatory Change, USML Category XI and "Equipment"
U.S. Department of State
Washington, DC 20522-0112

RE: Federal Register: November 28, 2012 (Volume 77, Number 229)
RIN 1400-AD25 Public Notice 8091

Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for ``Equipment''

Dear Sir or Madam:

TechAmerica would like to thank the Department of State (DOS) for the opportunity to comment on this proposed rule. The rule is an integral part of the President's Export Control Reform initiative, whereby the Department of State proposes to amend the International Traffic in Arms Regulations (ITAR) to revise Category XI (military electronics) of the U.S. Munitions List (USML) to describe more precisely the articles warranting control on the USML and to provide a definition for ``equipment.'' Please consider the comments listed below when developing the final rule.

Category XI--Military Electronics

(a) (7) Developmental electronic devices, systems, or equipment funded by the Department of Defense;

Note 1 to paragraph (a) (7): Paragraph XI (a) (7) does not control developmental electronic devices, systems, or equipment (a) determined to be subject to the EAR via a commodity jurisdiction determination (see Sec. 120.4 of this subchapter) or (b) identified in the

relevant Department of Defense (DoD) contract as being developed for both civil and military applications.

Note 2 to paragraph (a) (7): Note 1 does not apply to defense articles enumerated on the USML, whether in production or development.

Comments on (a) (7) and Notes 1 and 2

The term "device" was not part of this paragraph in the current USML and is not defined under 121.8, unlike "system" and "equipment" and has a very general meaning (i.e., a thing or tool designed to do a task). This term, with no additional details provided - unlike other parts of Category XI where the term device is also used – makes this section potentially very broad, as one could interpret the term to include, for example, any item developed under a Broad Agency Announcement (BAA) or Small Business Innovation Research (SBIR) contract.

Note 1 clearly states that any developmental device, system or equipment funded by the Department of Defense would be subject to ITAR unless there is a Commodity Jurisdiction (CJ) or an affirmative statement on the contract that this is for both commercial and military application. In reality, meeting either of these two criteria is going to be extremely difficult as (a) it is highly improbable that a small business will request a CJ for an item under development, and (b) while an SBIR solicitation typically includes a statement indicating that the work has both military and commercial application, the actual contract never does, but instead contains the Defense Acquisition Regulations System (DFARS) clause 252.204-7008 (ITAR or EAR applies), leaving the company to make a self-determination or seek a CJ.

With regard to Note 1 (b) TechAmerica is also concerned that DoD contracts will not widely incorporate the provisions of Note 1 (b) to USML Category XI (a) (7), the implication being that any DoD funding for "developmental electronic devices, systems, or equipment" would automatically be subject to the ITAR until such time as a formal CJ is returned with dual use determination or the relevant DoD contract specifies that the items are being developed for both civil and military applications. We have historically seen numerous examples of otherwise commercial programs being subject to the ITAR as a result of contracting officers including statements in contracts deeming all aspects of a program be ITAR controlled even in such cases of programs building to commercial standards, such as the Federal Bureau of Investigation (FBI) standards for law enforcement equipment. As such, we are skeptical that a Note 1 (b) contract provision would find its way into widespread adoption within DoD contracts, resulting in increased administrative burden both among industry and within the Directorate of Defense Trade Controls (DDTC). To alleviate this concern, we recommend eliminating paragraph XI (a) (7) entirely.

In the alternative, we recommend modifying the paragraph as follows:

1) **Eliminate** the term "devices" from the title and from Note 1
(a) (7) "Developmental electronic systems, or equipment funded by the Department of Defense"

Note 1 to paragraph (a) (7): Paragraph XI (a) (7) does not control developmental electronic systems, or equipment) **Modify Note (1) (b) as follows**
Note 1 to paragraph (a) (7) […] (b) identified in the relevant Department of Defense contract ***or solicitation*** *as being developed for both civil and military applications"*

(c) (2) Printed circuit boards or patterned multichip modules for which the layout is "specially designed" for defense articles in this subchapter;

Comments on (c) (2)

Depending on the to be determined definition of "specially designed," printed circuit boards (PCBs), including bare PCBs, would actually become more controlled by the proposed rule, rather than less controlled, by eliminating the current language that decontrols items with significant commercial equivalency. Additionally, past jurisdiction determinations will need to be revisited where commercial determinations have been made, either through formal CJs, or by internal CJs citing past precedent, requiring new CJ applications, additional self-disclosures and increased administrative burden both among industry and within DDTC.

Additionally, PCBs may be "specially designed" for a defense article, however, the PCB design does not include any information about the use of the military or intelligence product, software or technical data. Most PCB technical data, due to significant commercial equivalency, does not rise to the level currently controlled under the ITAR, Category XI (c) (2). It would not constitute technical data required for the PCBs control under Category XI (c) (2) because the information in a PCB is related to input/output characteristics only, and is unrelated to the military or intelligence functionality that is responsible for a product's control under the ITAR, Category XI (c) (2).

(c) (17) Any part, component, accessory, attachment, equipment, or system that (MT for those articles designated as such):

(i) Is classified;
(ii) Contains classified software; or
(iii) Is being developed using classified information.
(iv) Classified 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 intergovernmental organization.

Comments on (c) (17)

Determining export control jurisdiction of hardware based on it simply containing classified software is completely misguided. This is a roll-back from current practice and will cause significant confusion regarding the jurisdiction of hardware. The impact of this change would be that such everyday items as a commercial desktop computer would itself be considered a defense article because of the classified software it contains. Because the computer itself would be considered a defense article every part, component, accessory, and attachment would then have to be reviewed to determine if they meet the definition of specially designed. For example, based on the draft entry XI (c) (2) regarding printed circuit boards, the commercial printed circuit boards in the computer would then be regarded as ITAR controlled because they are specially designed for a commercial computer that is now ITAR controlled simply because it contains classified software. The negative implications of the unintended consequences of this entry could be staggering. Access to such hardware must be controlled due to the presence of the classified software. But, unless the hardware itself is somehow modified by having the classified software installed on it, the hardware should retain its export control jurisdiction. As such, we strongly recommend this entry be deleted.

General Comments

TechAmerica would like to request assurance from the DOS that prior CJs, which were ruled as commercial, but now may fall into this proposed XI (c) (2), will not have to be re-submitted to ensure that they remain commercially controlled under the EAR.

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

January 28, 2013

Ms. Candace Goforth
Director, Office of Defense Trade Controls Policy

Subject: Proposed Revisions to USML Category XI – Military Electronics

Dear Ms. Goforth:

Thank you for the opportunity to comment on the proposed regulations. Military electronics are sensitive topics, and we understand the difficulty in balancing the needs of business with those of national security. That said, we believe that the proposed regulations would overly restrict some technologies while being too lax with others.

Broadly speaking, we know that big, million dollar sonars should probably be regulated by the State Department or the Department of Defense. Systems in the $25,000 range should probably be regulated by the Commerce Department. Sonars at the sub-$5,000 price point are probably consumer grade and should be unregulated unless there is a good reason to control their export. This picture has become complicated in recent years because consumer grade side scan sonars have started to appear, but side scan sonars have historically been developed for mine countermeasures.

Consider this sonar:

http://store.humminbird.com/products/409964/798ci_HD_SI_Combo

It costs $1050, has 2.5 inch resolution (roughly 12 kHz of bandwidth), and is fully capable of finding mines at limited ranges. We do not believe the intent of the proposed regulations is to recast Humminbird, Bass Pro Shops, Walmart, and West Marine as arms dealers for selling fish finders, but arguably this would occur under the proposed XI(a)(1)(i)(C and D).

We believe what you are trying to capture with XI(a)(1)(i)(C), the 10 kHz of bandwidth rule, are lower frequency systems (likely under 300 kHz, possibly under 100 kHz). Building a 10 kHz system with 10 kHz of bandwidth is hard; building a 1 MHz system with 10 kHz of bandwidth is easy.

We therefore recommend changing the specification from an absolute bandwidth to a fractional bandwidth (i.e. bandwidth divided by center frequency) of one tenth of the center frequency. Such a specification is a commonly accepted measure of system performance in the sonar and radar communities, as it serves as a good rule of thumb for the level of sophistication required to construct a system. For blazed array type sonars,

we recommend that the fractional bandwidth be applied per beam and only apply to sonars with frequencies below 250 kHz (to avoid regulating medical ultrasound technologies).

We further believe that 10 kHz is an awkward specification, because 7.5 cm resolution sonars would be regulated while 3 inch resolution sonars (7.62 cm) would not. When English and metric specifications are close together the regulatory boundary should be chosen so as to be consistent across units.

In practice, the definitions of resolution and bandwidth are not clean, and there is always room for interpretation. For example. a 94-106 kHz chirp might be considered to exceed 10 kHz of bandwidth, but upon application of a windowing function the 3 dB down points of the spectrum might imply less than 10 kHz. The proposed rules are ambiguous with respect to measuring bandwidth: it could be 3 dB down on transmission, 3 dB down on reception, usable bandwidth in terms of SNR, potential bandwidth, or even something else. If we fail to precisely define bandwidth and defer to the multitude of possible interpretations, we are left with a regulation that can be easily bypassed. **We believe that a rigorous definition of bandwidth must be employed in order for this rule to be truly meaningful. One option is to define bandwidth in terms of SNR in excess of 3 dB after reception.**

Regarding XI(a)(1)(i)(B), a passive acoustic array that can detect surface vessels and has an operating frequency less than 20 kHz would seem to include every hydrophone used for whale watching. We do not believe that the intent is to require tourists, researchers, and environmental groups to get an export license every time they go more than 12 miles offshore. Similarly, although certainly unintended, the regulations would apply to any system involving the human auditory apparatus, which operates below 20 kHz and is capable of classification. **We recommend the regulation include a sensitivity specification, a directionality specification, and/or a channel count limit.**

We agree that XI(a)(1)(iv) is a solid regulation (low probability of intercept signals). **We recommend extending the LPI regulation to include active sonars and radars.** However, some nuance is required, as it is extremely easy to reconfigure many sonars to transmit LPI signals.

Regarding XI(a)(1)(vi), most cooperative sensing upgrades to AUVs are software upgrades. **We recommend explicitly regulating the software.**

Rules XI(a)(3 and 4) regulate many radar systems that are almost identical to unregulated sonar systems. For instance, the proposed regulations would apply to synthetic aperture radar (SAR) but not synthetic aperture sonar (SAS), to radar coherent change detection but not sonar coherent change detection, etc. Mathematically, many of these techniques are identical or nearly identical. This is

why sonar, radar, and seismic signal processing are often lumped together in a single class:

http://acoustics.mit.edu/faculty/abb/2.163/www/2.163J.html

Likewise, on a software level, often the only difference between a sonar and radar algorithm are input parameters such as center frequency and propagation velocity. If one class of software is regulated but not the other, it becomes fairly easy to export both. **We recommend that XI(a)(3 and 4) be modified to regulate the sonar equivalents of the mentioned radar technology.**

We believe that it will be very difficult to enforce XI(a)(11)(vi). Systems are designed to operate up to certain depths, not to fail beyond those depths, and systems are usually designed with significant safety factors. Often this means that systems will work far beyond their ratings. For instance, we are aware of a component that was originally rated to a few hundred feet that, after some testing, was found to be usable by James Cameron's group for their Marianas Trench dive to 11,000m. Were the original designers of the system lying? No. They had built a system with no readily identifiable failure modes, and then only burdened themselves with the cost of testing the component to the depth limit that applied to their customers.

Additionally, safety factors are often somewhat arbitrary. It is easy to start with a 1000m depth rated system, decide it needs a higher safety factor, and then down-rate it to a 750m rating; what is difficult is increasing the depth rating. This means that basic engineering practice is not working in your favor as regulators because manufacturers can arbitrarily down-rate their systems to drop below the regulatory threshold. Similarly, even the well intentioned will apply different safety factors and depth ratings to a given piece of equipment when applied to manned and unmanned systems. For instance, it would be entirely reasonable to give the same system a 1500 m unmanned depth rating but a 750m manned depth rating, making it both regulated and unregulated. As with system bandwidth, depth rating must be rigorously defined if the regulation is to be meaningful and not easily bypassed

At the very least, the depth regulation needs to be changed from "exceeding 1000m" to "equaling or exceeding 1000m". There are no 1001m rated systems; the proposed language would effectively regulate 1500m systems.

We furthermore suggest that the following sonar components be considered for regulation

Air backed sonar projectors rated to depths equaling or exceeding 500m
Shear mode projectors
Single crystal projectors
Crystal growth methods and equipment for single crystal projector crystals
Multi-stage projectors

Flex tensional transducers
Acoustic vector sensors
Phased arrays
Doppler sharpened sonars
Doppler compensated systems
Sonars for underwater platforms at speeds equaling or exceeding of 10 m/s
Transducers designed to operate on supercavitating platforms
Anything related to anti-torpedo torpedoes
Sonars transmitting multiple simultaneous orthogonal signals
DVLs and CVLs
Optoacoustic systems
Laser range finders designed for imaging the sea floor
Range binned cameras
Streak tube imaging systems
Acoustic color classifiers
A/Ds above certain sample rates/bit precisions and noise floors
End to end obstacle avoidance and terrain following solutions (from raw sensor data to control outputs)
Terrain based navigation systems
Passive beacon navigation systems involving accurate clocks
Long/ultra short baseline systems exceeding some performance level
Classification and navigation algorithms using bistatic sensing
Timing systems for bistatic and multi-static acoustic sensing
Systems utilizing time reversal (a signal processing technique)
Low noise electrical systems designed to not jam sonar systems
Electromagnetic antennas rated to depths equaling or exceeding 1000m
Pressure compensated electronics
Pressure compensated batteries

We realize that we are suggesting the regulation of some newer technologies while relaxing the regulations on some older technologies, and that the maturity of some of these technologies may have not reached the level of "fleet readiness".

In closing, we respectfully submit these observations and recommendations for your consideration. We believe that effective regulation is critical to preserving America's competitive edge in the global marketplace while maintaining national security. Devising the proper rules poses a difficult challenge, and we believe the suggestions above will help the US achieve this balance, while at the same time making compliance and enforcement easier for all parties involved.

Very best,

Rick Rikoski	Dan Cook	Dan Brown
CEO/Chief Scientist	Senior Research Engineer	R&D Engineer
Hadal, Inc.	Georgia Tech Research Institute	Applied Research Laboratory Penn State

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January 28, 2013

PUBLIC DOCUMENT

Submitted electronically to DDTCResponseTeam@state.gov

U.S. Department of State
Office of Defense Trade Controls Policy
PM/DDTC, SA-1, 12th Floor
2401 E Street, NW
Washington, D.C. 20037

ATTN: Candace M. J. Goforth
Director, DTC Policy

Re: **Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment"**

Dear Ms. Goforth:

Cree, Inc. ("Cree") respectfully submits these comments in response to the November 28, 2012 notice published by the U.S. Department of State, Directorate of Defense Trade Controls ("DDTC") proposing amendments to the International Traffic in Arms Regulations ("ITAR"). See "Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for 'Equipment,'" 77 Fed. Reg. 70,958 (Nov. 28, 2012). Cree appreciates this opportunity to provide comments on the proposed revisions to the U.S. Munitions List ("USML") Category XI (military electronics).

Cree supports the President's Export Control Reform Initiative efforts to develop a positive list of controlled military electronics with a "bright line" between the USML and the Commerce Control List ("CCL"). However, Cree is concerned that the proposed revisions to USML Category XI could inadvertently expand controls on several commercial parts that presently are, and should continue to be, regulated on the CCL or as EAR99. Cree's comments focus on the removal of the "normal commercial use" exclusion from USML Category XI(c) for parts and components, as well as the inclusion of "operating frequencies" as a control criteria in that same section.

I. Background

Cree is a publicly traded company headquartered in North Carolina, with over $1 billion in annual revenue. Its operations are primarily domestic, and it has approximately 3,000 U.S. employees. Cree manufactures a variety of discrete radio frequency transistors (also referred to as high electron mobility transistors) ("HEMTs"), microwave monolithic integrated circuit ("MMIC") power amplifiers, and bare transistor die. Several of Cree's products could become more restrictively controlled as the result of this regulation, with the potential loss of export sales.

Cree markets several of its products to the telecommunications ("telecom") industry, as well as to other commercial industries. For example, wireless broadband and mobile carriers operate in the 2.5-2.7 GHz segment of the S-band frequency range. Also, telecom infrastructure providers use wide band-gap products, such as with a frequency range of DC-18 GHz, for backhaul services (meaning that telecom providers can take the traffic at a local cell phone tower back to the switchboard by aggregating the calls). In December 2012, the Federal Communications Commission ("FCC") announced a proposed rule that will allow small cells/citizens band radio to operate in the 3.55-3.65 GHz band (the spectrum is currently used by naval radar systems). As a result, Cree anticipates there will be a surge in commercial demand for transistors with a rated peak power of 120 W in that bandwidth. See 78 Fed. Reg. 1,188 (January 8, 2013). Similar parts are available without licensing restrictions on the foreign market, such as those manufactured by UMS (Germany), Mitsubishi (Japan), Toshiba (Japan), and Sumitomo (Japan).

These products improve service and reduce costs for the telecom industry. Cree, and other domestic producers of transistors and amplifiers, are positioned at this critical moment to have their products designed into next generation systems for these applications. However, constraining U.S. companies with increased controls would make them uncompetitive and could result in the loss of this billion dollar market to foreign competitors. Ultimately, an increase in controls could jeopardize thousands of high-paying U.S. export jobs and cede growth opportunities in the next-generation telecom infrastructure to foreign competitors.

II. Comments

A. Removal of "Normal Commercial Use" Exclusion

Cree supports the development of USML Category XI(c) for parts and components into a positive list, with specifically enumerated items. Cree is deeply concerned, however, about the removal of the following language from that section: "except for such items as are in normal commercial use." In Cree's experience, if a radio frequency product in normal commercial use is determined to be ITAR-controlled, commercial customers typically will turn to other sources for an equivalent product. Thus, the product could suddenly lose its commercial viability, and in the global semiconductor market, such opportunities will go to foreign competitors. As it is DDTC's stated intent not to inadvertently expand controls on items in normal commercials use, Cree recommends keeping that exclusion in USML Category XI(c). See 77 Fed. Reg. at 70,960.

B. Inclusion of "Operating Frequencies" Criteria

Cree also is concerned about including "operating frequencies" as a control criteria in proposed USML Category XI(c)(16). Specifically, under USML Category XI(c)(16), a part would be "specially designed" if operating frequencies were customized for a military customer. Such customization is typical for all customers and should not be a triggering factor to make a product subject to the ITAR.

To capture economies of scale in the tight market for radio frequency ("RF") transistors and amplifiers, manufacturers often need to design parts that can perform across a spectrum of frequencies. It is common for a frequency historically designated for military use, such as X-band, to be sandwiched

in between two bandwidths that are traditionally commercial, such as the C-band and Ku-band. Even within a particular bandwidth, such as X-band or Ka-band, there could be multiple applications. Furthermore, frequency bands historically designated for military satellite communications (e.g., X-band) are increasingly becoming commercialized. Including "operating frequencies" as USML control criteria does not reflect the current realities of the RF market. Cree strongly recommends that DDTC strike the reference to operating frequencies from proposed USML Category XI(c)(16).

* * *

Cree appreciates this opportunity to submit these comments for consideration. We would welcome the opportunity to answer any questions DDTC may have concerning the issues raised in these comments.

Respectfully submitted,

Diana Semel Allen
Associate General Counsel
Cree, Inc.

Association Connecting Electronics Industries

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January 28, 2013

Ms. Candace Goforth
Director, Office of Defense Trade Controls Policy
Directorate of Defense Trade Controls
U.S. Department of State
2201 C Street, NW
Washington, DC 20520

VIA EMAIL: DDTCResponseTeam@state.gov

Re: Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for ''Equipment'' (Federal Register Docket ID. 2012–28477, RIN 1400–AD25)

Dear Ms. Goforth:

IPC — Association Connecting Electronics Industries® has a long history of cooperation with, and support of, the agencies that develop and implement national security policy. In this vein, IPC has offered its views to the Department of State regarding previously released U.S. Munitions List (USML) category revisions, and it now welcomes the opportunity to comment on proposed revisions to Category XI (Military Electronics).

IPC commends the State Department for its proposed approach to controlling printed circuit boards (PCBs) in the above referenced rulemaking. IPC believes this approach is a significant improvement over the current regulations. IPC specifically supports the State Department's decision to enumerate PCBs on the USML, along with the level and scope of controls that the draft rule would establish for PCBs in defense electronics. IPC wholeheartedly agrees with the State Department on the need to control, under ITAR, PCBs necessary for ITAR-controlled defense electronics, as PCBs and their design files contain valuable information about the workings of defense electronics for which they are uniquely designed. In order to fully protect defense electronics and the defense articles into which they are integrated, PCBs must be controlled in the same manner as the defense electronics for which they are designed.

IPC, however, is concerned that the rule's use of "specially designed" as the principal means of controlling PCBs will perpetuate the pervasive defense industry confusion about ITAR's treatment of PCBs. This confusion will result in the continued unlicensed sourcing of PCBs for defense electronics. IPC believes that this industry confusion stems from the mistaken, but commonly held, view that PCBs are commercial-off-the-shelf components. PCBs, in fact, are always custom designed for the electronics into which they are incorporated. The draft rule's use of "specially designed" to control PCBs may be interpreted by some in the defense supply

chain to indicate that both specially designed and non-specially designed PCBs exist. In addition, the use of "specially designed" unnecessarily requires manufacturers to make judgments about the applicability of the term's catch-and-release paragraphs when only one of the elements of the definition of specially designed is applicable to PCBs. The use of "specially designed," in short, undermines the very clarity that the State Department sought to instill through the enumeration of PCBs on the USML.

IPC urges the State Department to enhance the clarity of ITAR controls on PCBs consistent with the principle that, in determining their ITAR applicability, PCBs generally should follow the electronics for which they are designed. Specifically, IPC recommends that the State Department modify paragraph (c)(2) to explicitly control PCBs, "which, as a result of development, are necessary for defense electronics to function as designed." Consistent with the State Department's proposed rule, IPC's recommended language merely integrates the lone definitional element of "specially designed" that generally applies to PCBs. In addition, IPC believes the State Department should note in its preamble to the final rule that it regards all printed circuit boards uniquely designed for their end function. Clarifying this point will help dispel the false notion of the existence of commercial-off-the-shelf PCBs. Finally, the State Department should clarify that design and digital instructions for printed circuit boards constitute technical data under paragraph (d) of the proposed rule.

II. About IPC

IPC is a U.S.-headquartered global trade association, representing all facets of the electronic interconnect industry, including printed board design, manufacturing and assembly. IPC has more than 3,300 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, public policy advocacy and other programs to meet the needs of an estimated $2.02 trillion global electronics industry.

III. Clear Controls on PCBs are Imperative to National Security

In previous comments to other proposed USML category revisions, IPC has urged the Department of State to establish clear and appropriate controls on PCBs and PCB designs for ITAR items. PCBs are currently regulated in Category XI(c) of the USML as, "[c]omponents, parts … specifically designed or modified for use with the equipment," in Category XI(a) and (b), i.e. military electronics. However, PCBs for ITAR items are often sourced from non-ITAR facilities without necessary export licenses because many in the defense manufacturing supply chain are unaware that every PCB is custom designed for the electronic item into which it is incorporated. Because PCBs are not enumerated on the USML, understanding their regulatory status requires an understanding of both ITAR and the unique nature of PCBs.

Each printed circuit board is uniquely designed for the specific function of the electronic item in which it is incorporated; each contains a roadmap for the operation of that item. The manufacture of the printed board requires access to and use of extensive design information for the PCB as well as its electronic components, including embedded antennas, microchips, and other

components. Access to this data exposes a significant portion of the intellectual property of both the printed board and the item for which it is uniquely designed.

As an example of the significant information contained in printed circuit boards, consider the Joint Counter Radio-Controlled Improvised Explosive Device ("RCIED") Electronic Warfare ("JCREW"). JCREW jammer systems are used to prevent remote detonation of improvised explosive devices (IEDs). These systems are high-power, modular, programmable, multiband radio frequency jammers that deny enemy use of selected portions of the radio frequency spectrum. Three printed circuit boards help determine the frequency and range capability of JCREW systems. Access to these PCBs and their designs could lead to an understanding of the system architecture and how to circumvent the jammers. Protection of these printed circuit boards and their designs are critical to the functioning of the JCREW and the welfare of our troops.

This example, as well as others that IPC provided in its Category VIII comments (attached), reaffirm the need for strong and clear export controls on PCBs and their designs for ITAR-controlled defense electronics. The sourcing of PCBs for ITAR electronics from non-ITAR facilities, exposes U.S. military electronics to possible sabotage and reverse engineering, undermining U.S. military supremacy. In order to fully protect defense electronics under ITAR, PCBs must be controlled in the same manner as the defense electronics for which they are designed.

IV. Proposed Rule

A. Printed Circuit Boards

IPC commends the State Department for its thoughtful and greatly improved approach to the regulation of PCBs in paragraph (c)(2) of the proposed rule for Category XI:

> *"Printed circuit boards or patterned multichip modules for which the layout is 'specially designed' for defense articles in this subchapter."*

Given the history of industry confusion about ITAR's treatment of PCBs, IPC agrees with the State Department's decision to enumerate PCBs on the USML. The explicit enumeration of PCBs is the most effective and appropriate method of clarifying the regulation of PCBs and reducing the widespread confusion that has led to the unlicensed sharing of PCB design data with non-ITAR facilities. Moreover, the enumeration of printed boards is consistent with the State Department's own stated goal of establishing a "positive control list" to more clearly delineate between ITAR and non-ITAR covered items.

More broadly, IPC strongly supports, in concept, the export controls on PCBs that paragraph (c)(2) would put in place. This support is based upon IPC's understanding that paragraph (c)(2) employs "specially designed" in order to narrowly control, under ITAR, PCBs necessary for defense electronics to function as designed. IPC agrees that this level and scope of control are necessary to safeguard defense articles critical to U.S. national security.

However, the rule's use of "specially designed" as the principal means of controlling PCBs will perpetuate confusion about ITAR's treatment of PCBs, resulting in the continued unlicensed sourcing of PCBs for defense electronics. While "specially designed" is a legal term that will be defined on the ITAR, it is likely to be misinterpreted as implying the existence of non-specially designed PCBs, especially given its placement in paragraph (c)(2) as a modifier to PCB layouts. Commercial-off-the-shelf PCBs, of course, do not exist; all PCBs are custom designed. The mistaken belief in non-custom designed PCBs could lead a manufacturer and exporter to disregard the controls on PCBs.

In addition, the use of "specially designed" will require exporters to connect the dots between what is stated in the Category XI and "specially designed" rules, adding confusion to what should be a clear and focused articulation of controls on PCBs. For example, it is IPC's understanding that Paragraph (c)(2) of the Category XI rule does not constitute a "catch-all" paragraph, and therefore, the releases from "specially designed" do not apply to PCBs. While IPC understands this intent, we are concerned that many manufacturers may be confused by this reference and mistakenly consider PCBs to be released from ITAR control under paragraph (b) of the Department's proposed definition for "specially designed."

B. Printed Circuit Board Designs

IPC also understands that the proposed rule controls technical data related to printed boards for covered defense articles under paragraph (d):

> *(d) Technical data (see§ 120.10 of this subchapter) and defense services (see§ 120.9 of this subchapter) directly related to the defense articles enumerated in paragraphs (a) through (c) of this category and classified technical data directly related to items controlled in CCL ECCN 9E620 and defense services using the classified technical data. (See§ 125.4 of this subchapter for exemptions.) (MT for technical data and defense services related to articles designated as such.)*

Although not specifically stated, IPC appreciates that paragraph (d) would include the design and digital instructions necessary to manufacture a printed circuit board for an ITAR listed item. IPC supports such ITAR coverage for this highly sensitive information, but we believe the proposed rule does not clearly affirm that digital designs and instructions for PCBs constitute technical data under paragraph (d). Confusion on this point has led to unlicensed sourcing of PCBs for ITAR items from non-ITAR facilities under current law.

V. Recommendations

IPC urges the State Department to take advantage of the opportunity afforded by export control reform to further clarify controls on PCBs consistent with the principle that, in determining their ITAR applicability, PCBs generally should follow the electronics for which they are designed. Accordingly, IPC is proposing alternative language which it believes more clearly expresses this underlying principle. With respect to Category XI, IPC recommends the following:

1. **Modify paragraph (c)(2) to control "Printed circuit boards and patterned multichip modules which, as a result of development, are necessary for defense electronics to function as designed, other than printed circuit boards determined to be subject to the EAR as a result of a commodity jurisdiction determination."**

Explicitly and clearly enumerating PCBs on the USML is both the most effective means of controlling PCBs and the most consistent with the State Department's own stated goal of establishing a "positive control list." For this reason, IPC strongly recommends that the State Department retain PCBs on the USML as an enumerated item and clarify paragraph (c)(2) by replacing the reference to "specially designed" with its applicable definitional elements. Specifically articulating only the definitional elements that apply to PCBs in paragraph (c)(2) will maintain the intended level of control in a clearer and unambiguous manner.

IPC believes that the applicable definitional element for PCBs is paragraph (a)(2) of the proposed definition for "specially designed," which captures parts and components "necessary for an enumerated defense article to function as designed." This definitional element should be integrated into the language of Category XI in order to avoid confusion that would certainly result from the use of the complete definition of "specially designed." The use of "specially designed" would unnecessarily require exporters to independently determine the applicability of paragraphs (a)(1) and (a)(3), and to analyze correctly that paragraph (b) does not apply. In contrast, IPC's recommended language more clearly describes the PCBs the State Department seeks to control.

IPC also proposes the use of "as a result of development" in order to integrate the design element that the State Department sought to capture through the term "layout.' Included in its definition for "specially designed," "development" is defined by the State Department as "related to all stages prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts." IPC is concerned that the use of "layout" may introduce another layer of complexity on an issue that has already confused industry.

In addition, IPC's proposed language employs the term "defense electronics" to clearly distinguish between defense electronics and the defense articles into which those electronics are incorporated. IPC believes this language will avoid unintentionally capturing under ITAR PCBs that were developed for dual-use electronics and which are incorporated into ITAR-controlled defense articles.

Finally, IPC includes language exempting PCBs "determined to be subject to the EAR as a result of a commodity jurisdiction determination." This clause is designed to ensure that Category XI does not unintentionally capture under ITAR PCBs that do not merit ITAR control. Moreover, IPC would support alternative frameworks that would allow exporters to secure timely consideration of PCBs that they believe do not warrant ITAR control.

2. Clarify in the preamble or a note to the final rule that the State Department regards all PCBs, by the very nature, to be custom designed for their electronics.

Given the widespread lack of knowledge that all PCBs are custom designed for the electronic items into which they are incorporated, the State Department should take steps to address the underlying confusion that has led to the misapplication of the current law. In addition to providing enumeration of PCBs on the USML, the Department of State is encouraged to provide additional, explicit clarification of the unique nature of PCBs. Exporters and manufacturers must understand that all PCBs are uniquely designed for their relevant electronic products.

3. Confirm that the design and digital instructions for PCBs constitute technical data under paragraph (d).

IPC recommends that, in responding to public comments in the final rule, the State Department should clarify that PCB designs and digital instructions are subject to the USML when the electronic item for which the PCB has been designed is enumerated on the USML. Such a clarification is necessary given that design information is shared whenever manufacturing data is sent to a manufacturer. Otherwise, manufacturers may assume that export controls do not apply to the manufacture of items not destined for export.

VI. Conclusion

IPC supports the State Department's goal of reforming the USML to clearly describe what items the list covers. In this vein, IPC endorses the State Department's decision to enumerate printed circuit boards in Category XI, but expresses concern that the use of "specially designed" in controlling printed boards could undermine the State Department's efforts to draw a bright line between what is and is not controlled. IPC recommends that the State Department clarify controls on PCBs by modifying paragraph (c)(2) of the rule to clearly enumerate PCBs "which, as a result of development, are necessary for defense electronics to function as designed…"

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

Sincerely,

Fern Abrams

Fern Abrams
Director, Government Relations and Environmental Policy

NORTHROP GRUMMAN

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January 28, 2013

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ATTN: Ms. Candace Goforth
Director, Defense Trade Controls Policy

SUBJECT: RIN 1400-AD25 Proposed Revisions USML Category XI

Dear Ms. Goforth:

Northrop Grumman Corporation supports the Department's objective of a positive United States Munitions List (USML), so that exporters can ascertain with a larger degree of certainty those items that are controlled on the list. We appreciate the opportunity to comment on proposed changes identified in RIN 1400-AD25, USML Category XI and offer the following:

1) We recommend that an additional guidance note be published pertinent to Category XI(a)(3) radars: "Technical parameters identified are designed capability thresholds. Since advertised system performance is within a set of defined conditions, such a system may perform a higher or better limits when the environmental conditions are altered." We believe further definition or clarifying notes will assure the standards are being applied consistently when evaluating the technical parameters for specific radar systems within Category XI(a)(3).

2) We have no specific technical comments regarding the identified sub-categories of radar systems identified in Category XI(a)(3) although it would reduce the level of re-classification within the USML if future export license applications identified the radar as XI(a)(3) without having to identify the radar to the lowest sub-category level.

3) While not specifically identified in the various radar sub-categories in XI(a)(3), we recommend that airborne weather radars, developed for a military application, that incorporate Commerce controlled predictive wind shear algorithms and software, are appropriately controlled by the Department of Commerce and recommend that a specific 3A611 sub-paragraph be created incorporating the preceding descriptive language for airborne weather radars.

4) While the notes to proposed USML Category XI(a)(7) for developmental electronics are helpful, we propose additional language to proposed Category XI(a)(7) "Developmental electronic devices, systems, or equipment for a military application, funded by the Department of Defense and inventions/innovations not disclosed to the U.S. Government."

5) We recommend a separate sub-paragraph be identified for software and software source code for the development, operation, test and repair of articles enumerated in Category XI. While ideally the sub-paragraph would be added to each of the USML Categories, to align more closely with the CCL, given the use of software in electronics, this is particularly critical, as there may be ongoing or periodic transfers of software over the product life cycle. If such an entry were added, additional license exemptions would require clarification as being applicable to "technical data and software", rather than the current language referencing "technical data" with the inference that software is included as a category of technical data.

Should clarification or subsequent technical discussions be necessary, please contact me at beth.mersch@ngc.com, or 703-280-4056, and we will engage the appropriate individuals.

Sincerely,

Mary Elizabeth Mersch

Mary Elizabeth (Beth) Mersch
Director, Export Operations

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

January 28, 2013

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 XI - 77 FR 70958, RIN 1400-AD25

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 7,000+ 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.

Overall, the proposed rule revising USML Category XI is a good step forward. With some exceptions, the document contains clear and rational positive criteria that help to establish a bright line between what is subject to the jurisdiction of the ITAR and what is not. We urge the department to further evaluate the exceptions, as enumerated below.

Specific Comments on USML Category XI-Electronics

XI(a)(7), Developmental electronic devices, systems, or equipment funded by the Department of Defense. 22 C.F.R. §120.1(a) delegates the statutory authority of the President to promulgate regulations with respect to the export of defense articles to the Secretary of State, not the DoD. Permitting the DoD to designate items as defense articles is inconsistent with the ITAR and the export reform efforts. As proposed, the only criteria for ITAR control is that an item be an electronic device, developmental, and funded by the DoD. There is not even a requirement the item be enumerated or described elsewhere in Category XI. An item in development or not, funded by the DoD or not, is not and should not be determinative for export control jurisdiction. Such an approach will result in an item being treated as a defense article during its development, but once in production, the item would no longer be subject to the ITAR because it is not enumerated on the USML. An item is either enumerated on the USML or it is not. If it is enumerated, it is a defense article. If it is not enumerated and the department wants to capture it

as so, it has USML Category XXI available for that specific purpose. As such, we strongly recommend this entry be deleted.

XI(a)(11), Test sets "specifically designed" and programmed for testing counter radio controlled improvised explosive device (C-RCIED) electronic warfare (CREW) systems. The positive criteria for control under this entry are unclear. As written the article must be specifically designed and it must be programed for testing. Just being specifically designed, the article would not be controlled here, making the ultimate reason for control that it is programmed for testing counter RCIED EW systems. As such, we recommend this entry be amended to reflect control of the programming technical data rather than the test device itself.

XI(b), Electronic systems or equipment "specially designed for" is extremely broad. Activities defined as "collection, surveillance, and monitoring" has significant potential to encompass many existing commercial items that are used by industrial security, police forces, search and rescue, and private citizens. We recommend "collection, surveillance, and monitoring" be deleted from this paragraph.

XI(b)(1), Non-cooperative direction finding systems.....and are not "specially designed" for navigation. This entry uses specially designed in a negative context. The definition of specially designed is written in a positive context. Applying the criteria negatively is extremely confusing. We recommend this entry be revised to cite the purposes the systems must be specifically designed for to ensure only those articles of a true national security nature are controlled.

XI(b)(4), Technical surveillance counter-measure (TSCM) or electronic surveillance equipment. This entry has six positive criteria cited (i through vi). While we read the "and" after (v) to mean that an article must meet all six criteria, for clarity and consistency with the rest of the EAR the rule should be revised to add a sentence clearly stating that all criteria must be met to be controlled here.

XI(b)(4)(iv), Technical surveillance counter-measure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum that have a volume of less than 1 cubic foot. If our interpretation of XI(b)(4) above is accurate, then this comment is moot. If not, given the ever decreasing volume and size of electronics devices in today's market, citing a criterion for control on the USML based on the physical size of an electronic device appears shortsighted. If XI(b)(4) does not require that all six positive criteria be met, then we recommend this entry be deleted.

XI(c)(2), Printed circuit boards or patterned multi-chip modules for which the layout is specially designed for defense articles in this subchapter. As written, this entry not only applies to items listed in Category XI, but to all defense articles listed on the entire USML. While we agree there are certain printed circuit boards of such importance as to warrant control under the ITAR, we do not agree that all bare circuit boards with the layout designed for defense articles would require such control. As proposed, the rule is too generic. The layout of a circuit board is important. But, the layout still is only the process, the path that electrons must take to get from the entry point on the board to the exit point. As such, bare circuit boards are simply one low level step in the multi-layered building block of a defense article. In general, the critical technology lies not

with the board itself, but with any unique chips mounted on the board, with any unique firmware installed on the components on the board, and the software that runs through the overall system. Special chips, firmware, and software are the critical pieces to a defense article. There are certain printed circuit boards whose layout is directly responsible for the defense article performing the defense functions that are the identified reason for controlling the end item on the USML. Such printed circuit boards should be controlled here. The result of setting as the positive criteria the requirement to tie the layout of the board to the function of the defense article for the reasons it is controlled would result in such critically important boards as those associated with guiding missiles to their intended targets, encrypting or decrypting secure communications, and electronic jamming systems remain controlled while the printed circuit boards associated with mundane tasks such as starting an engine on an aircraft or tank are not so controlled. Such an approach would be consistent with the stated objectives of the export control reform effort. We recommend this paragraph be amended to read "Printed circuit boards or patterned multichip modules which, as a result of development, are peculiarly responsible for and end item enumerated in this subchapter to meet or exceed the positive criteria identified as the reason(s) for control."

XI(c)(17), Any part, component, accessory, attachment, equipment, or system that contains classified software. Determining export control jurisdiction of hardware based on it simply containing classified software is completely misguided. This is a roll-back from current practice and will cause significant confusion regarding the jurisdiction of hardware. The impact of this change would be that such everyday items as a commercial desktop computer would itself be considered a defense article because of the classified software it contains. Because the computer itself would be considered a defense article every part, component, accessory, and attachment would then have to be reviewed to see if they meet the definition of specially designed. For example, based on the draft entry XI(c)(2) regarding printed circuit boards, the commercial printed circuit boards in the computer would then be regarded as ITAR because they are specially designed for a commercial computer that is now ITAR simply because it contains classified software. The negative implications of the unintended consequences of this entry could be staggering. Access to such hardware must be controlled due to the presence of the classified software. But, unless the hardware itself is somehow modified by having the classified software installed on it, the hardware should retain its export control jurisdiction. As such, we strongly recommend this entry be deleted.

As we stated earlier, with the above exceptions the proposed rule conforms extremely well to the tenants of the export control reform effort. It establishes a clear jurisdictional line and limits control under the ITAR to those items truly requiring such control.

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 Compliance
& Associate Corporate Counsel
DRS Technologies, Inc.

BEFORE THE

Department of State

Washington, DC

In the Matter of

Amendment to the International Traffic in Arms Regulations:

Revision of U.S. Munitions List Category XI and Definition for "Equipment"

RIN 1400-AD25

, Department of State

Introduction

1. These comments are hereby submitted in response to the above captioned Notice of Proposed Rule with Request for Comments ("NPR"), in which the Directorate, Defense Trade Controls, U.S. Department of State ("DDTC") proposes to amend Category XI of the U.S. Munitions List and to define the term "equipment".

2. It is often repeated that one of the purposes of the export reform of this Administration is to build higher fences around fewer commodities, which commodities then will be subject to the strict controls of the International Traffic in Arms Regulations ("ITAR"). The corollary to this proposition is that export reform is not intended to expand and should not expand (either intentionally or inadvertently) the ring-fence of the strict controls of the ITAR to encompass commodities that presently are subject to the export controls of the Export Administration Regulations ("EAR"), unless, of course, there is a significant military or intelligence advantage to be achieved thereby.

2. Moreover, the ring-fence of ITAR controls should not be expanded to cover commodities that are in normal commercial use or and that are or should be subject to the export controls of the EAR.

3. DDTC appears to have acknowledged this proposition in the NPR when DDTC stated in the preamble –

> The current USML Category XI(c) does not control electronic parts, component, accessories, and attachments "in normal commercial use." Although the proposed revisions to the USML do not preclude the possibility that electronic and other items in normal commercial use would or should be ITAR-controlled because, *e.g.*, they provide the United States with a critical military or intelligence advantage**, the U.S. Government does not want to inadvertently control items on the ITAR that are in normal commercial use.** The public is thus asked to provide specific examples of electronics, if any, that would be controlled by the revised Category XI that are now in normal commercial use." [Emphasis added].

4. However, this approach places the burden on industry to demonstrate that any articles enumerated in proposed Category XI(c) are now in normal commercial use. Unfortunately, this approach also begs the question of whether any commodity in normal commercial use could possible provide the U.S. with a critical military or intelligence advantage. It would seem that if an article is in normal commercial use, then the critical military or intelligence advantage "horse" has already left the barn.

5. It also is important to emphasize that DDTC is asking only for examples "that are **now** in commercial use." [Emphasis added]. Is it DDTC's intent that articles that are being specially developed now for commercial applications or that in future are specially developed for commercial applications would have to go through a Commodity Jurisdiction procedure before they are subject to the controls of the EAR? Is it not possible that there are articles that have one or more of the characteristics listed in Article XI(c) but that do not create any critical military or intelligence advantage? If so, should not the revised Category XI make provision for such circumstances? We believe that the answers to the last two questions should be "yes."

6. The issue of future technology development highlights, it is asserted, the most critical flaw in a positive control list. A new technology, whether, for example, it is a new material or a new process, can make the positive list obsolete in the blink of an eye. A positive list therefore requires constant maintenance and revision. However, constant

maintenance and revision is precisely something that is not done well by the Government. Would it not be good policy for DDTC to acknowledge that there will always be a shortage of resources to review and update the USML and therefor it would be best to adopt a list that has the flexibility to minimize the necessity of updates and avoid unnecessary Commodity Jurisdiction determinations? Again, it is asserted that the answer should be "yes."

7. It is proposed that with some prudent changes to the prosed regulations these objectives can be accomplished. For the purpose of demonstration we will focus on an example using Category XI(c)(9) and a technology currently in development; *i.e.,* metamaterial surface scattering antennas.

Metamaterial

8. Metamaterials have been defined as "artificial materials synthesized by embedding specific inclusions, for example, periodic structures, in the host media."[1] These metamaterials are –

> typically realized artificially as composite structures that are composed of periodic metallic patterns printed on dielectric substrates. These inclusions affect the macroscopic properties of the bulk composite medium . . . for a certain frequency band.[2]

9. Another description of electromagnetic metamaterials is as follows:

> Electromagnetic metamaterials are artificially structured materials composed of periodic arrays of – typically resonant – subwavelength metallic structures whose electric or magnetic response provides the freedom to design dielectric or magnetic properties that might not exist in conventional materials. By changing the geometrical parameters of the constituent structure of the metamaterial, the realized dielectric or magnetic properties can be engineered. As a result,

[1] Weijen Wang, Master of Engineering in Electrical Engineering and Computer Science Thesis on "Directive Antenna Using metamaterial Substrates" (Massachusetts Institute of Technology, June 2004).
[2] Id.

> metamaterials enable the design of materials with choice electromagnetic properties.[3]

10. One of the properties of a metamaterial is that the material can be engineered to control the direction and power of emissions in a given frequency band in ways that are not possible with conventional materials. Consequently, use of metamaterial opens new possibilities for the design of antennas.

Metamaterial Antennas

11. A simple web search of theses covering metamaterial antennas demonstrates the amount of basic research that is being conducted on use of metamaterials for antennas. Similarly, a web search of patent applications relating to metamaterial antenna technology demonstrates the attention that is being given to the development of metamaterial for antenna applications. Even a cursory examination of these materials reveals an almost infinite variety of geometry and materials being researched for metamaterial antenna applications.

12. However, the development of metamaterial antennas has not been limited to basic and applied research. Metamaterial antennas have been developed, manufactured and widely deployed in Wi-Fi (*e.g.*, wireless routers) and cellular telephone applications, including cellular telephone antennas that operate in multiple bands. See, *e.g.* http://www.nec.com/en/press/201203/global_20120319_02.html.

[3] Sajuyibge, Adesoji, "Electromagnetic Metamaterials for Antenna Applications", Doctoral Dissertation for degree of Doctor of Philosophy in the Department of Electrical and Computer Engineering, Duke University (2010).

Metamaterial Surface Scattering Antennas

13. Other metamaterial antenna structures are in development for commercial applications such as surface scattering antennas that provide adjustable radiation fields. In some approaches the scattering elements are complementary metamaterial elements. In other approaches, the scattering elements are made adjustable by disposing an electronically adjustable material, such as a liquid crystal, in proximity to the scattering elements.

14. A metamaterial surface scattering antenna can be fabricated to be electronically reconfigurable for steering beams and nulls, for controlling polarization, for modifying amplitude and phase, and achieving beam switching.[4] However, the choice of the geometry and materials used in the arrays of subwavelength metallic structures dictates the usable frequency bands and therefore the applications for which the metamaterial surface scattering antenna can be used. It therefore can be said that a given metamaterial surface scattering antenna is "specially designed" for a specific frequency band. Because frequency bands are application(s) specific (specific as to radio services as defined by the Federal Communications Commission (FCC) and the International Telecommunication Union (ITU)),[5] a given metamaterial surface scattering antenna also is application(s) specific; i.e., is radio service specific.

15. Moreover, frequencies are allocated in the U.S. for one of three types of uses: (1) non-government exclusive; (2) government exclusive; and (3) non-government and government shared.

16. It is asserted that there is no reasonable expectation that an article specially designed to operate in frequency spectrum allocated in the U.S. exclusively for non-government use would be used with an enumerated defense article. Consequently, we assert that metamaterial surface scattering antenna specially designed to operate in

[4] See, Bily et al., Surface Scattering Antennas, United States Patent Application Publication US 2012/0194399 (August 2, 2012).
[5] See, U.S. and International Table of Frequency Allocations.

frequency bands allocated in the U.S. for exclusive non-government use should not be included on the U.S. Munitions List but should be subject to the export controls of the EAR.

17. It also is asserted that antenna specially designed to operate in frequency spectrum allocated in the U.S. for shared non-government and government use is a classic dual-use application. Consequently, we assert that metamaterial surface scattering antenna specially designed to operate in frequency bands allocated in the U.S. for shared non-government and government use should not be included on the U.S. Munitions List but should be subject to the export controls of the EAR.

Classification of Portable and Mobile Satellite Terminals for use with Commercial Telecommunications Satellites under Category XI(a)

18. Currently, as shown in Table 1 below, neither portable and nor mobile satellite terminals specifically designed for use with commercial communication satellite systems are enumerated in Category XI(a) of either the existing or proposed USML.

Table 1 – Comparison of Existing and Proposed Category XI(a)

Current Category XI(a)	Proposed Category XI(a)
(1) Underwater sound equipment . . .	(1) Underwater hardware, equipment, or systems . . .
(2) Underwater acoustic and passive countermeasures and counter-countermeasures.	(2) Underwater acoustic countermeasures or counter-countermeasures systems or equipment . . .
(3) Radar systems . . . [with certain capabilities]	(3) Radar systems and equipment . . .
(4) Electronic combat equipment, such as:	(4) Electronic combat equipment, such as:
(i) Active and passive countermeasures,	(i) Electronic support (ES) systems and equipment . . .
(ii) Active and passive counter-countermeasures, and	(ii) Systems and equipment that detect and automatically discriminate acoustic energy emanating from weapons fire . . .
(iii) Radios (including transceivers) specifically designed or modified to interfere with other communication devices or transmissions.	(iii) Systems and equipment "specially designed" to introduce extraneous or erroneous signals into radar, infrared seekers, radio communication receivers . . .
(5) Command, control and communications systems to include radios (transceivers), navigation, and identification equipment,	(5) Command, control, and communications (C^3), command, control, communications, computers, intelligence, surveillance and reconnaissance (C^4ISR), and identification systems or equipment . . .
(6) Computers specifically designed or developed for military application and any computer specifically modified for use with any defense article in any category	(6) [Reserved]

of the U.S. Munitions list.	
(7) Any experimental or developmental electronic equipment specifically designed or modified for military application or specifically designed or modified for use with a military system.	(7) Developmental electronic devices, systems, or equipment funded by the Department of Defense
	(8) Unattended ground sensor (UGS) systems or equipment having all of the following . . .
	(9) Electronic sensor systems or equipment for non-acoustic anti- submarine warfare . . . or mine warfare . . .
	(10) Electronic sensor systems or equipment for detection of concealed weapons, having a standoff detection range of greater than 45 meters for personnel or detection of vehicle-carried weapons;
	(11) Test sets "specially designed" and programmed for testing counter radio controlled improvised explosive device . . .
	(12) Equipment "specially designed" to process or analyze signals from defense articles controlled by this category; or
	(13) Direction finding equipment for determining bearings to specific electromagnetic sources or terrain characteristics "specially designed" for defense articles in paragraph (a)(1) of Category IV and paragraphs (a)(5) and (a)(6) of Category VIII.

19. Under the present Category XI(a) such terminals also would not be subject to ITAR controls because they are not "specifically" designed, developed, modified, configured or adapted for military applications.

Classification of Portable and Mobile Satellite Terminals for use with Commercial Telecommunications Satellites under Category XI(b)

20. An examination of the existing and proposed Category XI(b) also reveals that portable and mobile satellite terminals are not described.

Classification of Metamaterial Surface Scattering Antennas Incorporated into Portable and Mobile Satellite Terminals for use with Commercial Telecommunications Satellites under Category XI(c)

21. An examination of the existing and proposed Category XI(c) reveals that metamaterial surface scattering antennas and the parts and components incorporated into such antennas, even though specially designed for incorporation into portable and mobile satellite terminals and for use with commercial telecommunications satellites,

would appear to be ITAR controlled under the proposed regulations. In stark contrast, it appears that such commodities would be EAR controlled under the present regulations.

Table 2 – Comparison of Existing and Proposed Category XI(b)

Current Category XI(c)	Proposed Category XI(c)
(c) Components, parts, accessories, attachments, and associated equipment specifically designed or modified for use with the equipment in paragraphs (a) and (b) of this category, except for such items as are in normal commercial use.	(c) Parts, components, accessories, attachments, and associated equipment as follows:
	(1) Application specific integrated circuits (ASIC) for which the functionality is "specially designed" for defense articles in this subchapter.
	(2) Printed circuit boards or patterned multichip modules for which the layout is "specially designed" for defense articles in this subchapter.
	(3) Transmit/receive modules or transmit modules that have any two perpendicular sides, with either length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz . . . that incorporate a MMIC or discrete RF power transistor and phase shifter or phasers.
	(4) High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have any of the following . . ..
	(5) Radio frequency circulators of any dimension equal to or less than one quarter . . .wavelength of the highest operating frequency and isolation greater than 30dB;
	(6) Polarimeter that detects and measures polarization of radio frequency signals within a single pulse;
	(7) Digital radio frequency memory (DFRM) with RF instantaneous input bandwidth greater than 400 GHz and 4 bit or higher resolution and "specially designed" parts and components therefor;
	(8) Vacuum electronic devices . . .
	(9) Antenna, and "specially designed" parts and component therefor, that
	(i) Electronically steer angular beams and nulls with four or more elements;
	(ii) Form adaptive null attenuation greater than 35 dB with convergence time less than 1 second;
	(iii) Detect signals across multiple RF bands with matched left hand and right hand spiral antenna elements for determination of signal polarization ; or
	(iv) Determine signal angel of arrival less than two degrees (e.g., interferometer antenna);
	(10) Radomes or electromagnetic antenna windows that:

	(i) Incorporate radio frequency selective surfaces;
	(ii) Operate in multiple or more non-adjacent radar bands;
	(iii) Incorporate a structure that is "specially designed" to provide ballistic protection . . .
	(iv) Have a melting point greater than 1,300 degrees C and maintain a dielectric constant less than 6 at temperatures greater than 500 degrees C;
	(v) Are manufactured from ceramic materials with a dielectric constant less than 6 at any frequency from 100 MHz to 100 GHz;
	(vi) Maintain structural integrity at stagnation pressures greater than 6,000 pounds per square foot
	(vii) Withstand combined thermal shock greater than 4.184×10^6 J/m^2 accompanied by a peak overpressure of greater than 50 kPa; or
	(viii) Are configured to blend with the external geometry of end-items controlled in Category IV;
	(11) Underwater sensors . . .
	(12) Parts or component containing piezoelectric materials which are "specially designed" for underwater hardware . . . controlled by paragraph (c)(11) of this category;
	(13) Tuners having an instantaneous bandwidth of 30 MHz or greater and a tuning speed of 300 microseconds or less to within 10 KHz of desired frequency;
	(14) Electronic assemblies and components "specially designed" for missiles, rockets or UAVs capable of achieving a range of at least 300 km and capable of operation at temperatures in excess of 125 degrees C;
	(15) "Specially designed" hybrid (combined analogue/digital) computers for modeling, simulation, or design integration of systems enumerated in paragraphs (a)(1), (d)(1), (h)(1), (h)(2), (h)(4), (h)(8), and (h)(9) of Category IV or paragraphs (a)(5) and (a)(6) of Category VIII;
	(16) Parts, component, or accessories "specially designed" to modify or customize the properties (e.g., operating frequencies, algorithms, waveforms, CODECs, or modulation/demodulation schemes) of a radio or information assurance/information security article controlled in this subchapter beyond what is specified in the public domain or the published product specification; or
	(17) Any part, component, accessory, attachment, equipment, or system that is (i) classified; (ii) contains classified software; or (iii) is being developed using classified information.

22. It appears to be clear that proposed Category XI(c) was not drafted with either metamaterial antennas or metamaterial surface scattering antennas in mind. This is understandable because the basic and applied research in metamaterials and particularly in metamaterial antennas is fairly recent. The research and development related to metamaterial surface scattering antennas is even more recent.

23. It does not appear that there are presently any metamaterial surface scattering antennas currently being offered for sale. However, at least one Company, Kymeta Corporation[6] of Redmond, Washington, as announced plans to manufacture metamaterial surface scattering antennas for use in Ka-band portable and mobile satellite terminals and make such terminals available for purchase by commercial users as early as this year. These Ka-band portable and mobile satellite terminals will be "specially designed" to operate in the Ka-band frequency spectrum allocated in the U.S. and internationally for fixed satellite and mobile satellite services, which frequencies are allocated in the U.S. for exclusive non-government use.

24. These metamaterial surface scattering antennas have the potential to disrupt the portable satellite terminal and mobile satellite terminal markets because the metamaterial surface scattering antennas will have higher data rates, smaller footprints and less power consumption than antennas implementing other technologies.

25. It is asserted that it is not in the interest of the United States to artificially limit the access of U.S. manufacturers of satellite terminals to the satellite terminal market by failing to adapt the proposed ITAR regulations to the changing technology. U.S. jobs, U.S. balance of payments and U.S. technology are all at stake.

26. Several possible modifications to the proposed rules are therefor set forth below.

[6] See, http://www.kymetacorp.com

Alternative 1 – Except Metamaterials "Specially Designed" for Operation in Frequency Spectrum that is not Reserved in the U.S. for "Government Exclusive" Uses

27. This approach has the advantages of simplicity and effectiveness. It is proposed that Category XI(c) be amended to exempt items incorporating metamaterials that are 'specially designed" to operate in frequencies allocated in the U.S. as "non-government exclusive" or "non-government and government shared" unless the item incorporates classified information or is otherwise described in paragraph 17 of Category XI(c). Items incorporating metamaterials that are "specially designed" to operate in a frequency allocated in the U.S. as "government exclusive" would then be subject to further examination under the tests set forth in Paragraphs (1) through (17).

28. The language proposed is as follows:

> (c) Parts, components, accessories, attachments, and associated equipment, as follows, except such equipment incorporating metamaterials that are "specially designed" to operate in a frequency band allocated in the United States as "non-government exclusive" or as "non-government – government shared" unless such equipment are otherwise covered by subparagraph 17:

Alternative 2 – Except Items in Normal Commercial Use from Coverage under Article XI(c)

29. As noted previously, DDTC stated in the Preamble to the proposed rule that:

> The current USML Category XI(c) does not control electronic parts, component, accessories, and attachments "in normal commercial use." Although the proposed revisions to the USML do not preclude the possibility that electronic and other items in normal commercial use would or should be ITAR-controlled because, *e.g*., they provide the United States with a critical military or intelligence advantage**, the U.S. Government does not want to inadvertently control items on the ITAR that are in normal commercial use.** The public is thus asked to provide specific examples of electronics, if any, that would be controlled by the revised Category XI that are now in normal commercial use." [Emphasis added].

30. It is believed that it has been demonstrated in these comments that the proposed rule appears to inadvertently control items on the proposed USML Category XI that are both in normal commercial use today and that are in development for normal commercial use very soon.

31. In particular, the language in (c)(9) relating to beam forming and null steering appears to be overly broad. Null forming has many commercial applications and is an unattended by-product of any beam steering technology. Null forming is a part of signal optimization that is inherent in the design of "smart" antennas.

32. In fact, the beam and null steering language in proposed Article XI(c)(9) appears to be so overly broad as to capture MIMO technology in home routers. Does DDTC aspire to control the equipment used in millions of Wi-Fi access points?

33. Furthermore, it appears that the proposed Category XI would control items that are "specially designed" for communications in commercial frequency bands. Again, does DDTC really aspire to control these types of equipment with the strict controls reserved for equipment that provide the U.S. with significant military or intelligence advantages?

34. As a consequence, it is asserted that not only should the language "in normal commercial use" be reinstated in Article XI(9)(c) but that the language should be expanded: (1) to cover articles that are put into normal commercial use in future; and (2) to make it clear that normal commercial use includes foreign as well as U.S. markets.

29. The language proposed is as follows:

> (c) Parts, components, accessories, attachments, and associated equipment as follows, except such items as are in normal commercial use or are, in future, brought into normal commercial use (either in the U.S. or outside the U.S.):

Alternative 3 – Except Items from Coverage under Article XI(c) Incorporating Metamaterials "Specifically Designed" for Operation in Frequency Bands Allocated In the U.S. for "Non-Government Exclusive" or "Non-Government and Government Shared" and exempt Items in Normal Commercial Use

30. Alternative 3 would combine Alternatives 1 and 2 and is the preferred alternative.

31. The language proposed is as follows:

> (c) Parts, components, accessories, attachments, and associated equipment as follows, except such items incorporating metamaterials that are "specially designed" to operate in a frequency band allocated in the United States as "non-government exclusive" or as "non-government and government shared" " (unless such equipment are otherwise covered by subparagraph 17), or such items as are in normal commercial use or are, in future, brought into normal commercial use (either in the U.S. or outside the U.S.):

30. The high stakes for U.S. industry and for the U.S. economy underscores the importance of considering revisions to the proposed rules to avoid the potential consequences that have been discussed above. DDTC is respectfully urged to amend the proposed rule as suggested.

By: Dennis J. Burnett
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January 28, 2013

From: Van Eenenaam, James [mailto:james.vaneenenaam@ga.com]
Sent: Monday, January 28, 2013 3:36 PM
To: DDTC Response Team
Subject: ITAR Amendment - Category XI and Equipment

Andrew J. Shapiro
Assistant Secretary, Bureau of Political-Military Affairs, U.S. Department of State

And

Candace M.J. Goforth
Director, Office of Defense Trade Controls Policy, U.S. Department of State

Dear Mr. Shapiro, Ms. Goforth and To Whom It May Concern:

INTRODUCTION
In response to the proposed rule change announced in Federal Register Vol 77 No. 229 Pages 70958-70964, dated November 28, 2012, General Atomics Electronic Systems, Inc.(GA-ESI) must comment on paragraph (c) (4) on page 70963, regarding "High-energy storage capacitors". GA-ESI develops, designs, and manufactures high energy capacitors for both commercial and military applications.

BACKGROUND AND DISCUSSION
The paragraph in question reads:

(4) High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have any of the following:
(i) Volumetric energy density greater than or equal to 1.3 J/cc;
(ii) Mass energy density greater than or equal to 1.1 kJ/kg; or
(iii) Full energy life greater than or equal to 10,000 discharges;

As currently written, this description would encompass all "high energy storage" capacitors that have repetitive pulse discharge capability and a full energy lifetime greater than 10,000 discharges, regardless of energy density, which could include most commercial capacitor products of GA-ESI and its USA competitors, including High Energy Corporation, CSI Technologies, NWL, Aerovox, GE, and others.

Criterion (iii) creates the problem. It is possible for almost any capacitor to be repetitively discharged at >6 ppm for more than 10,000 discharges, if the electrical impedance of the load is appropriately matched to the capacitor's RMS current ratings so that overheating does not occur. It is therefore unclear from this rule as to how to draw a "bright line" separating commercial and military products.

Commercial products that might be encompassed by the rule as stated would include medical defibrillator capacitors (200-450 Joules); dc link capacitors used in electric trains, hybrid- and all-electric automobiles (500-20,000 Joules); and energy discharge capacitors used in

electromagnetic metal forming and joining or for driving flashlamps used to flash anneal semiconductor wafers. (5,000 to 100,000 Joules). A comprehensive list of commercial applications is too long to include here.

It is also true that competitive products falling under criterion (iii) are manufactured outside the USA, in most developed and developing countries, including India, Russia, and China.

Simply changing the word "any" to "all" in the opening statement and changing "or" to "and" at the end of criterion (ii) would eliminate almost all commercial capacitor products from inclusion and focus the statement on high energy density capacitors that are of military interest.

Thus, at a minimum, the rule should be changed to read:

(4) High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have ALL of the following:

(i) Volumetric energy density greater than or equal to 1.3 J/cc;

(ii) Mass energy density greater than or equal to 1.1 kJ/kg; AND

(iii) Full energy life greater than or equal to 10,000 discharges;

In this case, GA-ESI does have some existing commercial products that would still be encompassed by the above revised rule. Specifically, some products in our Series CMX have volumetric energy densities exceeding 1.3 J/cc, mass energy density exceeding 1.1 kJ/kg, and full energy lifetimes exceeding 10,000 pulses. While these capacitors cannot be operated continuously at a repetition rate of 6 ppm *at their maximum peak current ratings*, they could be operated continuously at some lower peak current at 6 ppm, or, they could be operated in burst mode at their maximum peak current ratings and 6 ppm for tens or hundreds of discharges. They would therefore still be subject to the suggested minimally revised rule above.

Specific technical information on the Series CMX capacitors can be found at:

http://www.ga-esi.com/EP/capacitors/series-CMX-high-energy.php

GA-ESI also produces another series of commercial capacitors with lower energy density which would be encompassed by the above suggested minimally revised rule. At first glance, Series CMF capacitors do not seem to simultaneously exceed both the energy density and lifetime criteria. Those designs that have 1.8 J/cc volumetric energy density have lifetimes of only 1,000 discharges. However, if a user reduces the voltage and operates one of these capacitors at a reduced energy density of 1.3 J/cc, they can achieve 10,000 discharge lifetime, which would place the Series CMF capacitor under the suggested minimally revised USML CategoryXI rule. This illustrates how it might be difficult for non-experts to identify products that should be controlled by simply reading specification sheets.

http://www.ga-esi.com/EP/capacitors/series-cmf-self-healing-capacitors.php

Commercial applications for Series CMX and CMF capacitors include nuclear fusion research being conducted by both private companies and US and foreign Government laboratories,

electromagnetic metal forming and joining equipment, magnetization equipment, and surge test equipment for switches, circuit breakers, and other products.

GA-ESI understands that at least one foreign manufacturer, Kyocera-AVX-TPC, located in France, has commercial capabilities that exceed the revised rule written above. In 2008, AVX-TPC published a commercial marketing brochure entitled "DISFIM High Voltage Film Capacitors", which graphically showed that they could supply 1300 Joule/liter (1.3 J/cc) capacitors with 10,000 discharge lifetime at that time. Given that 5 years have passed since that publication, it is likely that AVX-TPC's capability now exceeds that threshold.

The AVX-TPC DISFIM brochure can be found here:

http://www.avx.com/docs/Catalogs/discharge.pdf

RECOMMENDATION

Based upon the above discussion, GA-ESI recommends that the rule be revised to exclude all existing commercial products, by increasing the controlled energy density values to 2.6 J/cc and 2.2 kJ/kg. GA-ESI also recommends defining the minimum stored energy per unit that is to be controlled (i.e. 300 kJ), whether the repetition rate is continuous or else is determined by some minimum number of discharges in a continuous burst, and the minimum peak current of the discharges in terms of Amps/Joule. An example of how the rule would thus be rewritten is shown below:

(4) High-energy (greater than or equal to 300 kJ) storage capacitors with a continuous duty repetition rate of 6 discharges or more per minute that have ALL of the following:

(i) Volumetric energy density greater than or equal to 2.6 J/cc;

(ii) Mass energy density greater than or equal to 2.2 kJ/kg; AND

(iii) Full energy life greater than or equal to 10,000 discharges at greater than 0.2 Amps/Joule peak current;

CLOSING

Should you have questions, or require additional supporting information, please do not hesitate to contact me by phone at 1-858-455-3746 or by email at james.vaneenenaam@ga.com and I will coordinate a response.

Thank you in advance for your consideration of this important matter. Your time and assistance is appreciated.

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January 25, 2013

Ms. Candace M. J. Goforth
Director
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Directorate of Defense Trade Controls
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Subject: **Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment"**

Reference: **RIN 1400-AD25**
Federal Register/Vol. 77, No. 229/Wednesday, November 28, 2012

Dear Ms. Goforth,

The Boeing Company ("Boeing") appreciates the opportunity to provide comments on the proposed revision to Category XI of the U.S. Munitions List ("USML"), Military Electronics, Part 121 of the International Traffic in Arms Regulations ("ITAR"). Boeing appreciates the Directorate of Defense Trade Controls' (DDTC) continued engagement with industry during the export control reform process, and we reiterate our commitment to assist DDTC and the U.S. Government in the reform process by providing comments to this and other proposed rules.

Boeing welcomes a simplified, more narrowly-defined, positive-list Category XI and also supports the proposed definition for "equipment", which provides additional clarity to the USML. The transfer of items from the USML to the Commerce Control List (CCL) will allow both government and industry to focus licensing and compliance resources on those products and technologies that are most critical to U.S. national security. These refocused controls will also strengthen the U.S. industrial base by facilitating and expanding legitimate overseas business opportunities for U.S. companies. More broadly, Boeing continues to support the Administration's ultimate goal of creating a single control list and single licensing agency.

As requested in the proposed rule, Boeing's comments are based on the parameters of the definition of the term "specially designed" provided by DDTC in the June 18, 2012, proposed rule (77 FR 36428). However, the final definition of "specially designed" has not yet been published, making it difficult to apply the new controls to specific export scenarios or to fully measure the implications of the changes, both for items listed in Category XI and for those that would be transferred to the Department of Commerce. We encourage State and Commerce to

publish the definition of "specially designed" as soon as possible in order for industry to provide more definitive feedback.

Summary of Comments:

Generally speaking, we find DDTC's proposed rewrite of USML Category XI to be clear and understandable, setting mostly well-defined parameters. However, we believe that certain of the capabilities or items proposed to be retained on the USML are currently used in, or likely to be used in, commercial applications. Because of the proprietary nature of the information, Boeing is unable to provide specific details for some of our comments. However, where available, we have referred to foreign supplier information or information published in open journals to illustrate the international availability of an item or technology.

Of greatest concern for Boeing are the control paragraphs that appear to capture existing civil technologies. In particular, Traffic Collision Avoidance Systems appear to be captured by paragraph (c)(9), phased array SATCOM antennas for satellite communications used on commercial aircraft are captured by paragraph (c)(9), Automatic Direction Finder antenna are possibly captured by paragraph (c)(9), air surveillance radar requirements of paragraphs (a)(3)(viii) and (x) may capture civil sector applications, and paragraph (b) captures many elements in the commercial wireless security sector. Further information is available below in comments 41, 15, and 33 respectively.

Where items have been identified as currently in commercial use, we strongly recommend that such items be transferred to Export Administration Regulation (EAR) jurisdiction. For control parameters that are already achieved by other international providers, we recommend that those restrictions be eliminated and control of such items be transferred to EAR jurisdiction; items available internationally offer no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the new criteria for maintaining control under the ITAR. In the alternative to transferring such items to EAR jurisdiction, we recommend that DDTC utilize the description "'specially designed' for a military application" throughout Category XI, in order to avoid the inadvertent capture of commercial items.

Within this framework, we provide the following comments to the proposed revision to Category XI:

Comments on Paragraph (a):

1. Paragraph (a)(1)(i) *Active or passive acoustic array sensing systems or equipment that survey or detect, and track, localize (i.e., determine range and bearing), classify, or identify surface vessels, submarines or other undersea vehicles, torpedoes, or mines having any of the following:* To provide additional clarity to the paragraph, we recommend that DDTC consider making the distinction between (a) imaging sonars (such as forward looking sonar, side looking sonar and synthetic aperture sonar, which detect and classify objects by providing a large number of pixels on the object) and (b) sonars that detect and classify objects by exciting structural resonances in the object.

2. Paragraph (a)(1)(i)(A) *Multi-aspect capability:* Boeing believes this may be a typographical error and recommends DDTC revise this entry to read: Multi-**Static** Capability. Additionally, Multi-statics are available on the foreign market (e.g., from GD Canada). Since items available internationally offer no critical military or intelligence advantage to the United States as they are not exclusively available from the United States, they do not meet the criteria for being ITAR-controlled. Given this fact, we would recommend that control of this capability be transferred to EAR jurisdiction, unless "specially designed" for a military application.

3. Paragraph (a)(1)(i)(B) *Operating frequency less than 20 kHz*: There are numerous commercial audio spectrum analyzers that operate below 20 kHz; what should be controlled are systems which operate above normal hearing. Therefore, Boeing suggests the following revision: (B) **Analysis or** operating frequency **greater** than 20 kHz.

4. Paragraph (a)(1)(i)(C) *Bandwith greater than 10 kHz*: Boeing requests clarification as to what DDTC seeks to control in this paragraph. We believe the intention here is to control acoustic spread spectrum systems. Therefore, we suggest the following revision to clarify: (C) **Analysis or operating** bandwidth greater than 10 kHz.

5. Paragraph (a)(1)(i)(D) *Capable of real-time processing*: We note that a fast time system is actually more capable than a real time system. Therefore, we suggest the following revision to more appropriately control the capability: (D) Capable of real-time **or faster than real-time** processing.

6. Paragraph (a)(1)(ii) *Underwater single acoustic sensor systems that distinguishes tonals and locates the origin of the sound*: Many navies deploy sonobuoys from maritime patrol aircraft. Almost every foreign submarine is equipped with passive sonar. Such systems give foreign powers the ability to "distinguish tonals and locates the origin of the sound." Because these items are available and widely used internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the criteria for being ITAR-controlled as a general category of items. Given this, Boeing recommends that DDTC identify "high performance" systems that provide very good frequency resolutions and large numbers of parallel processing channels to match the stability and duration of different sources of underwater tonals.

7. Paragraph (a)(1)(v) *LF/VLF electronic modems, routers, interfaces and communications equipment "specially designed" for submarine communications*: The phrase "submarine communications" used in this paragraph could be interpreted to capture any type of underwater communication. Boeing suggests DDTC consider rephrasing the paragraph as follows: "(v) LF/VLF electronic modems, routers, interfaces, and communications equipment "specially designed" for **communications among** submarines ~~communications~~; or".

8. Paragraph (a)(3)(i) *Airborne radar that track targets*: The term "targets" as used in this paragraph is overly broad. Boeing respectfully requests that DDTC provide further

clarification as to what type of targets are captured by this language (e.g., surface targets, airborne targets). "Target" could be interpreted to be either an item for which the position needs to be continuously monitored or the potential recipient of military action. Under the former interpretation, the civil collision avoidance system would be controlled. Additionally, the ability to track airborne targets is not inherently military; sense and avoid radars are headed for UAV use in non-military environments (e.g., radar systems on commercial UAVs will need to track general aviation aircraft not equipped with transponders in order to satisfy collision avoidance). Boeing suggests that the ambiguity be resolved such that civil UAV collision avoidance systems and derivative applications for manned civil aircraft are not covered by this listing. We suggest adding a definition of "Target" or a change in the control text such that civil collision avoidance systems incorporated to meet Federal Aviation Administration regulations are excluded. For example: "military target" or "hostile target". An alternative, but less desirable, approach would be to establish a performance parameter beyond 14 nm for a 1 square meter cross section. 14nm is the required detection range specified in the internationally sanctioned TCAS-II system.

9. Paragraph (a)(3)(ii) *Synthetic aperture radar (SAR) incorporating image resolution less than (better than) 0.3 meter, or incorporating Coherent Change Detection (CCD) with geo-registration accuracy less than (better than) 0.3 meter*: Boeing recommends that this paragraph be separated into two distinct entries for clarity; geo-registration is a separate issue from SAR map resolution. Further, commercial SAR imaging now incorporates both SAR and CCD, from aircraft and from satellites. The ease in achieving SAR resolution depends on range. At short range, 0.3 m is not difficult to achieve today. At much longer range, for example 50 nmi, it is more difficult. Some commercial systems can achieve 0.1 m (e.g., Lynx SAR and Thales SAR radars). Therefore, Boeing requests that DDTC consider using 0.1 meter as the threshold for both SAR and geo-registration accuracy so as not to capture commercial systems that are currently available.

10. Paragraph (a)(3)(iii) *Inverse Synthetic Aperture Radar (ISAR)*: ISAR is not inherently military as a general item. ISAR is used commonly in maritime operations for ship classification. . Therefore, because ISAR is not an inherently military item, we recommend that control of this be transferred to EAR jurisdiction, unless "specially designed" for a military application.

11. Paragraph (a)(3)(iv) *Radar that geo-locates with a target location error 50 (TLE50) less than or equal to 10 meters*: Short range radars can achieve this TLE easily. Additionally, this is highly relevant to commercial geospatial analysis. Companies making commercial SAR maps desire to correlate with true ground data to provide a useful overlay. As a result, a commercial SAR could be captured based on the geo-location that can be delivered. Therefore, Boeing suggests that DDTC revise this paragraph to read as follows: "(iv) Radar that geo-locates with a target location error 50 (TLE50) less than or equal to 10 meters **at ranges greater than 1 kilometer**."

12. Paragraph (a)(3)(v) *Any ocean surface surveillance radar with either a product of transmit peak power times antenna gain divided by minimum detectable signal of >165*

dB, or a capability to distinguish a target of<10 dBsm from sea clutter with a false alarm rate of 10^{-6} or better in sea state 3 or higher, or both: As currently drafted, the performance specifications are not inherently military. The noise limited ERP specifications will capture virtually all maritime surveillance radars. Further, the clutter limited performance measure does not provide enough specification to achieve a unique measure; almost every maritime patrol radar will be able to see a 10 dBsm target at some range. Additionally, radars meeting these requirements are currently available on the foreign market (e.g., radars that meet these specs are designed and manufactured by Elta (Israel), Thales (France), Thales (Britain), Selex (Britain), at least one Indian company, Chinese, and Russian companies). Because these items are available internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States, and therefore do not meet the criteria for being ITAR-controlled. Therefore, we recommend control of such radar be transferred to EAR jurisdiction, unless "specially designed" for a military application.

13. Paragraph (a)(3)(vi) *Sea surveillance/navigation radar with free space detection of 1 square meter radar cross section (RCS) target at 20 nautical miles (nmi) or greater range*: As currently drafted, the performance specifications are not inherently military, harbor security operations may use this capability. It is also unclear whether DDTC intends to capture in this paragraph airborne or coastal surveillance. Additionally, radar meeting these requirements are currently available on the foreign market (e.g., Elta (Israel) ACSR coastal surveillance radar, Elta (Israel) EL/M-2022, Selex (Britain) 7500E). Because these items are available internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the criteria for being ITAR-controlled. Therefore, we recommend control of such radar be transferred to EAR jurisdiction, unless "specially designed" for a military application.

14. Paragraph (a)(3)(vii) *Land or perimeter surveillance radar with free space detection of 1 square meter RCS target at 5.4 nmi or greater range and has a revisit rate of faster than once every sixty seconds*: As currently drafted, the performance specifications are not inherently military, homeland security (border surveillance) and occasional corporate infrastructure protection may use this capability. Additionally, radars meeting these requirements are currently available on the foreign market (e.g., Elta (Israel) Groundmaster v10 has detection at 6.4nmi with a revisit rate of 0.25 seconds; EADS Spexer 1500, 2000 has detection at 14.3 nmi with a revisit rate of about 15 seconds; and Tian He (China) BS-08 has detection at 5.9 nmi with a revisit rate of about 8 seconds. These are all foreign commercial systems that exceed the proposed control). Because these items are available internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the criteria for being ITAR-controlled. Therefore, we recommend control of such radar be transferred to EAR jurisdiction, unless "specially designed" for a military application.

15. Paragraph (a)(3)(viii) *Air surveillance radar with free space detection of 1 sq m RCS target at 85 nmi or greater range or free space detection of 1 sq m RCS target at an*

altitude of 65,000 feet and an elevation angle greater than 20 degrees: Boeing requests DDTC clarify the controls of this paragraph. The 65,000 feet and elevation angle greater than 20 deg thresholds seem arbitrary, as this is only a matter of antenna scanning. Boeing also notes that radars meeting these requirements are currently available on the foreign market (e.g., Elta (Israel), Thales (Europe), Selex (Italy), as well as from certain Russian and Chinese companies). In order to avoid inadvertent capture of commercial systems and to reduce confusion and questions relating to capability of systems currently used in the civil sector, Boeing strongly recommends the addition of the following note to (a)(3):

Note 2 to paragraph (a)(3): This category does not control the following commercial airborne avionics equipment:
(a) Weather radar equipment conforming to FAA Technical Standard Order (TSO) C63()
(b) Radio Altimeter equipment conforming to FAA TSO C87()
(c) ATC Transponder equipment conforming to FAA TSO C112()
(d) TCAS equipment conforming to FAA TSO C119() or other air or ground-based radar for civil collision avoidance

16. Paragraph (a)(3)(ix) *Air surveillance radar with multiple elevation beams, phase or amplitude monopulse estimation, or 3D height-finding*: Air surveillance radar that would be captured by this paragraph is not inherently military. Air racing and air traffic control radar development meet these requirements. Boeing expects that, over the next ten years, such capabilities will be offered on almost all air surveillance radars with a value greater than $1 million; many already have some of these capabilities. Further, radar meeting these requirements are currently available on the foreign market (e.g., ATAR (Israel) has multiple beams (others do as well), most have monopulse, and many have some form of 3-D height finding). Because these items are available internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the criteria for being ITAR-controlled. Therefore, we would recommend that these devices, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

17. Paragraph (a)(3)(xi) *Instrumentation radar for anechoic test facility or outdoor range to track targets, or provide measure of RCS of static target less than or equal to -10dBsm, or RCS of dynamic target*: The capabilities currently identified in this paragraph are not inherently military. Airborne clutter is an issue for air traffic control, for ground surveillance and security purposes (e.g., the RCS of birds and other airborne clutter is reviewed to eliminate them as potential targets for a variety of radar operations). We would recommend that these devices, unless "specially designed" for a military application, be transferred to EAR jurisdiction. In the alternative, we would recommend that DDTC clarify this paragraph, particularly by defining the term "dynamic target", and consider using -20 dBsm as the control parameter so as to not capture civil applications.

18. Paragraph (a)(3)(xii) *Radar incorporating pulsed operation with electronics steering of transmit beam in elevation and azimuth*: As currently drafted, this paragraph captures all

3-D AESA radars, regardless of purpose, including current maritime patrol, ground surveillance, and future air traffic control uses. Additionally, the controls do not address advanced technology, such as digital beamforming (stare while scan), which does not actually steer the beam. Most new radars will be using AESA for both commercial and military applications. Further, radars meeting these requirements are currently available on the foreign market (e.g., Elta (Israel) EL/M-2052 and many others, Thales AESA radars, Phazotron (Russia), NRIET (China)). Because these items are available internationally, they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States and therefore do not meet the criteria for being ITAR-controlled. Therefore, we would recommend that these devices, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

19. Paragraph (a)(3)(xiv) *Active protection radar and missile warning radar with mode(s) implemented for detection of incoming munitions*: Commercial aircraft in high threat areas may use such active protection radar and missile warning radar, in addition to border and building perimeter security applications. Additionally, radar meeting these requirements is currently available from Phazotron's (Russia) Missile Warning radar for aircraft, many for ground systems. Because items meeting this control parameter are available internationally they provide no critical military or intelligence advantage to the United States as they are not exclusively available from the United States. Therefore, they do not meet the criteria for being ITAR-controlled. Given this, we would recommend that these devices, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

20. Paragraph (a)(3)(xv) *Over the horizon high frequency sky-wave (ionsphere) radar*: As currently drafted, the control parameters are not inherently military. High frequency radar is used for a variety of meteorological efforts, including looking at winds and ocean flows around the world. Therefore, we would recommend that such radar, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

21. Paragraph (a)(3)(xvi) *Radar that detects a moving object through a physical obstruction at a distance greater than 0.2 meters from the obstruction*: The requirement to detect an object through a physical obstruction at 0.2 meters is not an inherently military characteristic. This capability is equally important for police operations, as well as general building and infrastructure security and safety considerations. We request DDTC reconsider control of radar identified within this paragraph and recommend that such radar, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

22. Paragraph (a)(3)(xvii) *Radar having moving target indicator (MTI) or pulse-Doppler processing where any single Doppler filter provides a normalized clutter attenuation of greater than 50dB*: As currently drafted, the attenuation requirements are not large enough to filter out only military end uses. Radars meeting these parameters are currently used by border security and air traffic control, as well as in automotive functions. Radar with this capability is also available on the foreign market from Elta

(Israel) Groundmaster v10, and EADS Spexer 1500, 2000. Because items meeting this control parameter are available internationally they are not exclusive to the U.S., and thus provide no critical military or intelligence advantage to the United States. Boeing requests DDTC utilize 56 dB as the threshold attenuation so that the use of 55 dB down is permitted for civilian applications. Radar not meeting that threshold, unless "specially designed" for a military application, should be transferred to EAR jurisdiction.

23. Paragraph (a)(3)(xviii) *Radar having electronic protection (EP) or electronic counter-countermeasures (ECCM) other than manual gain control, automatic gain control, radio frequency selection, constant false alarm rate, and pulse repetition interval jitter*: It is difficult to characterize many items as being only for ECCM, since many provide other benefits to the radar. A number of features that may be called ECCM may be in use to avoid interference (e.g., sniff and channel hopping). Commercial radars often have some ECCM features that are put in for interference control or other reasons. Therefore, Boeing requests that DDTC more clearly identify in this paragraph the specific ECCM characteristics it wishes to control.

24. Paragraph (a)(3)(xx) *Radar employing electronic support (ES) mode(s) (i.e., the ability to use a radar system for ES purposes in one or more of the following: as a high-gain receiver, as a wide-bandwith receiver, as a multi-beam receiver, or as part of a multi-point system)*: The capability for radar ES modes is potentially important for communications applications using a single aperture. Therefore, Boeing requests DDTC be more specific in the control parameters of this paragraph in order to avoid inadvertent capture of commercial uses.

25. Paragraph (a)(3)(xxi) *Radar employing non-cooperative target recognition (NCTR) (i.e., the ability to recognize a specific platform type without cooperative action of the target platform)*: Radar NCTR has advantages for air traffic control in identifying platform types. Additionally, civil UAVs may need to recognize the general type of aircraft they are tracking. It is unclear what capabilities are intended to be addressed by the phrase "recognize a specific platform type". Boeing requests that DDTC clarify whether this language refers to "civil light aircraft vs. civil transport", or that DDTC intends to differentiate between two smaller aircraft types. Further, Boeing recommends that DDTC provide examples of specific platform types to help clarify what is intended to be controlled by this paragraph.

26. Paragraph (a)(3)(xxii) *Radar employing automatic target recognition (ATR) (i.e., recognition of generic target type using structural features of the target) with system resolution better than (less than) 0.3 meters*: Similar to the commentary provided in the bullet above, it is unclear what capabilities are intended to be controlled under this paragraph. Boeing recommends DDTC provide examples of "generic target types."

27. Paragraph (a)(3)(xxvii) *Bi-static/multi-static radar that exploits greater than 125 kHz bandwith and is lower than 2GHz center frequency to passively detect or track using RF transmissions (e.g., commercial radio or television stations)*: The control parameters identified in this paragraph are not inherently military. Border security and air traffic

control utilize radar fitting these specifications. Additionally, radars meeting these requirements are currently available on the foreign market from Selex (Italy) and Thales (France). Given this, we recommend DDTC reconsider control of radar identified within this paragraph to provide exclusion for civil aircraft application.

28. Paragraphs (a)(4)(i)-(ii), and Note to paragraph (a)(4)(i) *Electronic combat equipment, as follows…:* This paragraph puts export restrictions on types of equipment or sensors (i.e. ES, COMINT, ELINT and SIGINT) and not on specific capabilities deemed to be sensitive. There exist commercially available radar detectors that meet criteria (i) of locating sources of electromagnetic energy. The language might be streamlined if a list of sensitive capabilities were maintained such that sensors not exhibiting those capabilities could be sold as commercial items. This approach would reduce the burden on the export approval process, still allow that special export cases be evaluated, and "level the playing field" among contractors ensuring a consistent and documented set of restrictions for all sensor equipment. Also, given the availability of this type of commodity in the international marketplace, it may not make sense to control these product types in their entirety. Therefore, we recommend DDTC revise the control parameters to specifically identify those capabilities that are intended to be captured.

29. Paragraph (a)(4)(iii) *Systems and equipment "specially designed" to introduce extraneous or erroneous signals into radar, infrared based seekers, electro-optic based seekers, radio communication receivers, navigation receivers, or that otherwise hinder the reception operation or effectiveness of adversary electronics (E.g., active or passive electronic attack, electronic countermeasure, electronic counter-counter measure equipment, jamming, and counter jamming equipment)*: As drafted, this paragraph seems to control all forms of electronic protect/electronic attack equipment. However, electronic attack is often available as an adjunct to electronic support measures (ESM) through international providers. Even digital radio frequency memory (DRFM) is no longer a technology that is unique to the United States. This control effectively places a performance restriction on U.S. equipment that is already achieved by other international providers. Therefore, we recommend that those restrictions be eliminated, and more appropriately transferred to EAR jurisdiction, unless "specially designed" for a military application.

30. Paragraph (a)(5)(i) *C^3, C^4, and C^4SIR systems "specially designed" to integrate, incorporate, network, or employ defense articles controlled in this subchapter*: The distinction between non-military and military C^3/C^4 is increasingly blurred, with one of the only differentiators being the type of encryption incorporated. There are many weapons-oriented C^3 and C^4 systems that can be (and often are) composed of commercially available components and software. Border security, homeland security, compound perimeter protection, and police efforts utilize this type of item. Therefore, we recommend that DDTC differentiate, for example, between systems for security applications and systems for military actions.

31. Paragraph (a)(7) *Developmental electronic devices, systems, or equipment funded by the Department of Defense*: The controls of this paragraph seem to capture any

developmental electronic device, system or equipment developed or funded in any way by the Department of Defense. Boeing recommends that DDTC narrow the scope of this paragraph by:

- Clarifying that developmental items subject to this control are of a similar type to those already enumerated in Category XI;
- Qualifying the percentage of Department of Defense funding; and,
- Requiring that this control be applicable only in contract situations in which the Department of Defense receives intellectual property rights resulting from the development activities.

32. Paragraph (a)(8)(i)-(iv) *Unattended ground sensor (UGS) systems or equipment having all of the following*: The control parameters identified in these paragraphs capture even basic UGS requirements. UGS's are not inherently military, and are available in the foreign market from, among others, Tian He (China). Because items meeting this control parameter are available internationally they are not exclusive to the U.S., and thus provide no critical military or intelligence advantage to the United States. As such, they should not meet the criteria for being ITAR-controlled. Therefore, we recommend DDTC reconsider control of UGS identified within this paragraph and more appropriately transfer such items to EAR jurisdiction, unless "specially designed" for military application. In the alternative, we recommend DDTC provide exclusion for civil application.

Comments on Paragraph (b):

33. Paragraph (b) *Electronic systems or equipment "specially designed" for the collection, surveillance, monitoring or exploitation of the electromagnetic spectrum (regardless of transmission medium), for intelligence or security purposes or for counteracting such activities. This includes*: Boeing recommends DDTC amend the introductory language in Paragraph (b) to clarify whether the words "this includes" should be read as "limited to." If the following list is not a finite list of all items controlled, this paragraph becomes far too general. Boeing also has significant concern regarding the potential scope of coverage of "...equipment "specially designed" for the... exploitation of the electromagnetic spectrum... for security purposes". This can be interpreted to be an extraordinarily broad area that addresses many elements in the commercial wireless security sector. This control effectively places a performance restriction on U.S. equipment that is already achieved by other international providers. We recommend that these controls apply only to "military intelligence" and "national security" activities.

34. Paragraph (b)(2) *Such systems or equipment that use burst techniques (e.g., time compression techniques)*: Hardware and components utilizing burst techniques are common in existing civil network communications. Therefore, we recommend that this paragraph be eliminated and such items more appropriately made subject to EAR jurisdiction.

35. Paragraph (b)(3) *Systems and equipment "specially designed" for measurement and signature intelligence (MASINT)*: Boeing reads this control from an electronic warfare perspective and understands the intent of this paragraph is intended to restrict specific

emitter identification (SEI), which is a form of MASINT. However, as written it is unclear what precise measurement DDTC wishes to control under this paragraph. Further, controls in this paragraph effectively place a performance restriction on U.S. equipment that is already achieved by other international providers. Therefore, we recommend DDTC revise this paragraph to specifically exclude SEI.

36. Paragraph (b)(4) *Technical surveillance counter-measure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum that*: Boeing recommends DDTC revise this paragraph to clarify that equipment captured by this paragraph must contain all six elements outlined in paragraphs (i)-(vi). Additionally, the componentry to yield the performance parameters contained in this listing are available commercial-off-the-shelf. This amounts to an "end-use" control philosophy which is contrary to the objectives of the positive listing. Therefore, we recommend a revision to the text to read as follows: "(4) **Equipment "specially designed" for** technical surveillance countermeasure (TSCM) or electronic surveillance equipment …"

Comments on Paragraph (c):

37. Paragraph (c)(1) *Application specific integrated circuits (ASIC) for which the functionality is "specially designed" for defense articles in this subchapter*: The application of "specially designed" to the functionality of an item is confusing (e.g., does DDTC mean a specific operation, like decryption, or the entire ASIC with other common functions?). In order to clarify this paragraph, Boeing recommends DDTC enumerate specific functions, or categories of functions, that it intends to control in this paragraph.

38. Paragraph (c)(2) *Printed circuit boards or patterned multichip modules for which the layout is "specially designed" for defense articles in this subchapter*: There is no militarily-unique process used for making printed circuit boards. The printed circuit board does not reveal the design or function of the circuit card assembly, it simply serves as the interconnect board that electronic components are mounted onto. We do note that the complete circuit card assemblies, with all the electronics mounted on the printed circuit board, should be ITAR controlled if "specially designed" for military applications. Therefore, we recommend that DDTC revise this paragraph to control the complete circuit card assembly, when "specially designed" for military application, rather than printed circuit boards.

39. Paragraph (c)(4) *High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have any of the following*: These types of capacitors are already available commercial-off-the-shelf. Boeing believes these types of capacitors have legitimate application in the commercial sector (e.g., in automotive applications (electric and hybrid vehicles), and green energy generation (photovoltaic, wind)). Also, improvements to the structure of this listing can be made: (i) and (ii) appear to be in place to establish thresholds for what constitutes a high-energy storage capacitor. The listing indicates that a capacitor that meets any of the control parameters is controlled because a separate definition of "high energy storage capacitor" is not provided. With this text, any capacitor capable of both 6 discharges per minute and a life of 10,000

discharges would be picked up as an ITAR item, and we believe there are many such capacitors commercially available today. Therefore, we suggest changing the control text to: "(c)(4) High-energy storage capacitors with a repetition rate of 6 discharges or more per minute that have **all** of the following:"

40. Paragraph (c)(8)(ii) *Cross-field amplifiers with a grain of 15 dB to 17 dB or a duty factor greater than 5%*: The control parameters of this paragraph do not adequately define an inherently military device. There are cross-field amplifiers that either meet or exceed the identified parameters reported in international journals. Therefore, Boeing recommends DDTC reconsider control of cross-field amplifiers identified by this paragraph to provide exclusion for civil application.

41. Paragraph (c)(9)(i)-(iv) *Antenna, and "specially designed" parts and components therefore, that*: As currently drafted, subparagraph (i) captures the commercial TCAS (Traffic Collision Avoidance System) antenna on civil aircraft. This antenna electronically steers a beam using four elements. In addition, SATCOM antennae currently installed on commercial aircraft are also electronically steered and have more than 4 elements (L and KU bands).

    All of Boeing's commercial passenger aircraft are required to have the TCAS system. The phasing of the elements is varied to electronically steer the beam either forward, aft, left, or right. It can also be put into omni-directional mode. In order to properly function, it must electronically steer the beam.

    Also on commercial aircraft today are phased array SATCOM antennas for satellite communications, which are captured by this paragraph. There are L-band INMARSAT phased array antennas, and there are also Ku-band phased array antennas. These phased array antennas electronically steer the beam to find and then track the satellite as the airplane moves in flight. There are many more than four elements on these SATCOM antennas.

    The Automatic Direction Finder (ADF) antenna also may be captured by this paragraph, as it could be considered electronically steered. It does have four radiating elements, and these elements are phased to provide an omni-antenna beam, a "cosine" beam, and a "sine beam". These beams are used to find the angle from which ground stations such as AM radio stations or Non-Directional Beacons (NDBs) are emanating. The beam patterns are not varied electronically but are fixed. However, they are generated electronically.

    Additionally, future FAA requirements for civil aircraft collision avoidance may necessitate the development of systems which can determine the angle of arrival at precision better than 2 degrees, which would be captured by subparagraph (iv).

    Therefore, we strongly recommend that DDTC delete subparagraphs (i) and (iv) in their entirety from paragraph (c)(9).

42. Paragraph (c)(10)(i) *Incorporate radio frequency selective surfaces (MT)*: We believe the incorporation of selective surfaces onto radomes is a generic technology and could easily be considered for future civil applications. Therefore, we request DDTC reconsider this paragraph and recommend that such radomes or electromagnetic antenna windows, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

43. Paragraph (c)(10)(ii) *Operate in multiple or more non-adjacent radar bands (MT)*: Boeing is speculating that this listing is intended to be read as: "(ii) Operate in multiple, ~~or more~~ nonadjacent radar bands (MT)." Boeing is seeking confirmation that the traditional radar band designators (in order of frequencies, from low to high; X, Ku, K, and Ka) are intended to be used to interpret this control. Assuming that this is the case, there exist antenna windows designed for systems that transmit and receive in specific band widths that are not immediately adjacent but which fall within the X and Ku bands. We interpret these receivers to be operating in adjacent frequency bands (X and Ku bands) and therefore are not covered by this listing even though there is a gap between the operational frequencies of the specific components (gap: 12.8GHz to 14.0GHz). Based on the foregoing, we recommend DDTC amend the text as suggested above and provide a clarifying note to assist in interpretation of the control parameters.

44. Paragraph (c)(13) *Tuners having an instantaneous bandwith of 30 MHz or greater and a tuning speed of 300 microseconds or less within 10 KHz of desired frequency*: We note that controlling tuners with these characteristics could be detrimental to the development of commercial applications. In the near future, there will be commercial applications in which tuners at this performance level could be very valuable. There are several examples of providing spectrum sensing as a service to wireless users (see "Sensing as a service: An exploration into practical implementations of DSA" (http://hdl.handle.net/1721.1/59534)). While it provides no quantitative description of sensor requirements, the types of service and signals dealt with (fast access times, wide channel bandwidths) will likely drive bandwidth and tuning speeds to this regime. Further, these controls effectively place a performance restriction on U.S. equipment that is already achieved by other international providers (for example, see the *Journal of Electronic Defense*'s January 2011 technology survey). Therefore, we recommend that these control parameters be eliminated and, unless "specially designed" for a military application, be transferred to EAR jurisdiction.

45. Paragraph (c)(14) *Electronic assemblies and components "specially designed" for missiles, rockets or UAVs capable of achieving a range of at least 300 km and capable of operation at temperatures in excess of 125oC (MT)*: This paragraph makes reference to "range of at least 300 km" but fails to include a capability of delivering at least a 500kg "payload", as stated in the Missile Technology Control Regime (MTCR). Does DDTC intend to capture this payload requirement? To provide clarity to the paragraph, we recommend that DDTC revise this paragraph to remain consistent with the MTCR.

Boeing appreciates efforts made by the U.S. Government to exclude certain commercial items from coverage by the ITAR and believes the following listings and notes contain necessary exclusions or clarifications which need to be retained in the final rule:

- Paragraph(a)(3)(xxiv) *Radar employing waveform generation for low probability of intercept (LPI) other than frequency modulated continuous wave (FMCW) with linear ramp modulation;*

- Note to paragraph (a)(3): This category does not control secondary surveillance radar (SSR) or precision approach radar (PAR) equipment conforming to ICAO standards and employing electronically steerable linear (1-dimensional) arrays or mechanically-positioned passive antennae.

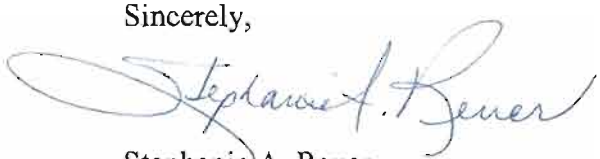
- Note 1 to paragraph (a)(7): Paragraph XI(a)(7) does not control developmental electronic devices, systems, or equipment (a) determined to be subject to the EAR via a commodity jurisdiction determination (see § 120.4 of this subchapter) or (b) identified in the relevant Department of Defense contract as being developed for both civil and military applications.

- Paragraph (b)(1) *Non-cooperative direction finding systems that have an angle of arrival (AOA) accuracy better than (less than) two degrees RMS and are not ''specially designed'' for navigation.*

In summary, we applaud DDTC's and the U.S. Government's efforts in amending USML Category XI into a more positive control list. Category XI is one which, unless carefully defined, has the potential to inadvertently reach into commercial technologies. We encourage DDTC to consider the wide international availability of many military electronic systems and technologies and define the control parameters of Category XI so that only those items that are exclusively available to, and provide critical military or intelligence advantage for, the United States are controlled.

Thank you for the opportunity to provide comments. Please do not hesitate to contact me if you have any questions or need additional information. I can be reached at 703-465-3505 or via e-mail at stephanie.a.reuer@boeing.com.

Sincerely,



Stephanie A. Reuer
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January 28, 2013

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: Ms. Candace Goforth
Director, Office of Defense Trade Controls Policy

Subject: Notice of Proposed Rulemaking, RIN 1400-AD25 (November 28, 2012), ITAR Amendment – USML Category XI

Dear Ms. Goforth:

Rockwell Collins appreciates the opportunity to provide comments on the proposed rules issued by the U.S. Department of Commerce (DOC), Bureau of Industry and Security (RIN 0694-AF64), and by the U.S. Department of State (DOS) (RIN-1400-AD25), published in the Federal Register on November 28, 2012. The proposed rules describe the articles that warrant continued control under Category XI (Military Electronic Equipment) of the U.S. Munitions List (USML) and address how articles that are no longer controlled under Category XI would be controlled under the Commerce Control List (CCL).

I. Corporate Background and Interest in Category XI Proposed Changes

Rockwell Collins, Inc. is a leader in the design, production and support of communications and aviation electronics for commercial and military customers worldwide. While our products and systems are primarily focused on aviation applications, our Government Systems business also offers products and systems for ground and shipboard applications. The integrated system solutions and products we provide to our served markets are oriented around a set of core competencies: communications, navigation, automated flight control, displays/surveillance, simulation and training, integrated electronics and information management systems. We also provide a wide range of services and support to our customers through a worldwide network of service centers,

including equipment repair and overhaul, service parts, field service engineering, training, technical information services and aftermarket used equipment sales. We are headquartered at 400 Collins RD NE, Cedar Rapids, Iowa 52498 and employ approximately 20,000 individuals worldwide. Our 2012 sales totaled almost $5 billion.

Rockwell Collins appreciates the opportunity to provide comments and supports the stated intent of the proposed regulatory amendments which is to make the USML and the CCL a more positive list by creating a clearer "bright line" regarding articles controlled between the USML and CCL. These changes are intended to advance the national security objectives of the U.S. by creating greater interoperability with U.S. allies, enhancing the defense industrial base and allowing the government to focus its resources on controlling and monitoring the export and re-export of more significant products and technology.

Given the majority of Rockwell Collins' defense products are captured within Category XI of the USML, we are very much interested in ensuring the changes being proposed not only further the national security objectives of the export control reform initiatives, but also allow for efficient international trade activities in the future.

II. Comments

Overall, while we believe the changes to Category XI of the USML create a clearer "bright line" between what should be controlled under the USML and CCL, many of our products will continue to require licensing in the future. A key change being made within the proposal is the move of parts, components and accessories from category XI(c) of the USML to the CCL 600 series which will generally require a DOC license (or EAR exception) to export. We view this change only as a shift in licensing from one agency (DOS) to another (DOC). Rockwell Collins has a significant number of category XI(c) items that we believe will move to the CCL 600 series. As discussed further below, we believe the proposed changes will cause a significant increase in our overall licensing volume. This scenario runs counter to the stated objectives of export control reform.

A. Licensing

For items moving from USML Category XI – Military Electronics to the CCL, Rockwell Collins has reviewed the impact of the proposed changes on its licensing activities. While we recognize that parallel efforts are underway to revise the regulations to address dual licensing and ITAR exemption/EAR exception differences, these revisions have not yet become effective. Therefore, our analysis was based upon how the proposed ITAR changes to USML Category XI articles would affect Rockwell Collins given the EAR as it exists today.

Our analysis led us to conclude that:

- The total number of licensing actions required by Rockwell Collins' Export Licensing Department would increase by ~30%. This takes into account the number of DOS licenses that would still need to be processed, the number of DOC licenses that would be required under the proposed reforms (assuming no change to the EAR as it is written today) and the number of transactions (or partial transactions) that would qualify for processing under the STA exception. The STA exception, while reducing the number of DOC licenses required, would still require administrative effort by Rockwell Collins' Export Licensing Department to satisfy all the documentation requirements of the exception. Therefore, this additional administrative effort was treated as a "licensing action" for each transaction to which it was applicable.

- "Systems" (made up of both ITAR-controlled equipment and the new CCL 600 series items) could face dual licensing requirements in the future. An ITAR-controlled item that remains in Category XI after the proposed reforms become effective would continue to require a DOS license, while CCL 600 series items that make up the remainder of the system may require a DOC license.

- In the situation described above, many of Rockwell Collins' foreign customers could be negatively impacted. This conclusion was based upon our analysis that for the time period studied, DOS hardware license requests experienced a 15-day approval cycle, while DOC hardware license requests experienced a 45-day approval cycle. Unless DOC license cycle times are dramatically reduced, Rockwell Collins' customers could have to wait, on average, an additional 30 days to receive their complete systems. This would be particularly troublesome in cases where Rockwell Collins is responding to certain customers' "AOG" (Aircraft on Ground) situations. Today, the Category XI articles that Rockwell Collins exports in these situations require DOS licenses that are often approved in less than one week. In the future, unless the same transactions qualify for the STA (or some other EAR) exception, it could take more than a month to receive approval of comparable DOC licenses, given current DOC processing times.

- Many items that Rockwell Collins exports today under either the "Repair Exemption" (ITAR § 123.4(a)(1)) or the "Low Dollar Value Exemption" (ITAR § 123.16(b)(2)) would move to the CCL. Because corresponding equivalent license exceptions do not currently exist under the EAR (though we recognize some changes have been proposed), a majority of these transactions that do not require a license today would, in the future, either require a DOC license or qualify for the STA exception (which is more administratively burdensome than the current ITAR exemptions).

To the extent that the Departments of State and Commerce have not already addressed these concerns, Rockwell Collins recommends the following:

- DOS allow license requests it receives to include CCL "license required" articles that are part of the same order as the ITAR articles being licensed, thereby eliminating the need for dual (DOS and DOC) licensing on one transaction. This would reduce the burden on both the U.S. Government and on industry when licensing USML articles and associated CCL parts and components.

- Increase staffing levels and/or make enhancements to licensing processes at the DOC in order to reduce the current approval cycle times, and to prepare for an expected increase in the number of license requests it receives. U.S. Government agencies involved in the review and approval of DOC licenses should be included in any efforts by the DOC to streamline their processes. To the extent possible, leverage lessons learned and best practices from the DOS, as they have significantly reduced their cycle times over the past six years.

- Regarding the STA exception, give consideration to one or both of these recommendations:

    - Provided national security concerns are appropriately addressed, expand the list of countries for which the STA exception would be available to help minimize the number of DOC license applications required.

    - Eliminate the "consignee statement" requirement entirely (or at least for exports to NATO countries) to significantly reduce the administrative burden on industry when using this exception. The statement is similar to a DSP-83 "Nontransfer and Use Certificate" form, which is required today for the export of Significant Military Equipment (SME), but not for non-SME articles (XI(c) items), the majority of which are slated to move to the CCL 600 series.

- Ensure that all license exemptions available under the ITAR today (particularly ITAR § 123.4(a)(1) and ITAR § 123.16(b)(2)) have reciprocal licensing exceptions under the EAR. Another, perhaps simpler, option may be to create one DOC license exception that authorizes the use of existing ITAR exemptions to export 600-series CCL parts and components.

B. Category XI USML Changes

Rockwell Collins believes the proposed reforms to the USML Category XI – Military Electronics (RIN-1400-AD25), goes a long way towards the government's goal of establishing a positive list that draws a "bright line" between the USML and the CCL. We believe the changes set forth in the Department of State's proposed rule (RIN 1400–AD25), for the most part, articulate the equipment and technologies the government feels

warrant the more stringent controls offered by the ITAR. We believe this will lead to more accurate export classifications and license applications by the defense industries impacted by the proposed changes.

However, we have some concerns on the language of "specially designed". Like many other categories of the USML, the proposed changes to Category XI contain extensive use of the phrase "specially designed". The proposed definition of "specially designed" is only in draft form, so our comments hinge on the final definition of this phrase and how clearly it articulates the articles it encompasses. The current proposed definition continues to be too broad in that it would allow items to be captured unintentionally as defense articles. We believe that the definition should focus more precisely on changes that relate directly to the 'unique military functionality/capability' of the defense article. Form or fit differences only should not cause the item to be captured as a defense article.

C. CCL Changes

Rockwell Collins believes the proposed reforms to the Export Administration Regulations (EAR) CCL (RIN 0694-AF64) are, by and large, positive; but believe some changes will lead to confusion and the potential for misclassification of certain commodities. Our specific comments on the proposed changes follow.

- We believe including computers, telecommunications equipment, radar "specially designed" for military use, parts, components, accessories, and attachments "specially designed" therefor, and related software and technology in the new 3A611, 3B611, 3D611, and 3E611 categories will lead to confusion and misclassification/licensing of controlled items. Rockwell Collins believes military computers, telecommunication devices, and radars should be placed in the appropriate existing CCL categories as 611 items. For example, military computers and related test equipment, software and technology that no longer warrant ITAR controls should be moved to ECCN 4A611, 4B611, 4D611 and 4E611. Likewise, telecommunication devices no longer controlled by the ITAR should be transferred to CCL in category 5A611, and radars in CCL category 6A611.

- Rockwell Collins believes the proposed CCL category 3A611.c, controlling microwave monolithic integrated circuit (MMIC) power amplifiers, and 3A611.d controlling discrete radio frequency transistors is a positive move that clearly defines the articles covered.

- As stated previously, we believe the proposed CCL category 3A611.e controlling high frequency (HF) surface wave radar capable of "tracking" surface targets on oceans will lead to confusion and misclassification. We believe a better move would be to control these device in a new ECCN in category 6 (ECCN 6A611).

- Rockwell Collins believes the proposed CCL category 3A611.f, controlling microelectronic devices and printed circuit boards that are certified to be a "trusted device" from a defense microelectronics activity (DMEA) accredited supplier is a positive move that clearly defines the articles covered.

- Rockwell Collins believes the proposed note in CCL category 3A611.x, clarifying that electronic parts, components, accessories, and attachments that are "specially designed" for military use that are not enumerated in any USML Category but are within the scope of a "600 series" ECCN are controlled by that "600 series" ECCN appears contrary to the reasoning used to include Military Computers, Telecommunication devices , and Radars in category 3A611, and further clouds exactly where electronic components should be classified.

- Rockwell Collins believes the proposed CCL category 3A611.y, controlling items of little or no military significance and imposing AT1 controls is not needed. We believe items of little or no military significance should be controlled in existing categories of the CCL that are appropriate to the particular device(s).

- Rockwell Collins believes the proposed changes to ECCN 3A101.a covering analog-to-digital converters is a positive change, however it seems to be inconsistent with the other proposed reforms which move military electronics in ECCN 3A611, and will add confusion if other reforms are implemented as proposed.

- Rockwell Collins believes the proposed rule revising the Related Controls paragraph in ECCN 5A001 to provide more detailed references to telecommunications equipment subject to the ITAR under USML Categories XI and XV, while maintaining references to ECCNs 5A101, 5A980, and 5A991 is a positive move, that is clearly and well defined. However, this change seems inconsistent with the proposed changes putting military telecommunications equipment that no longer warrant ITAR controls into category 3A611.

- Rockwell Collins believes the proposed addition of three new cross reference ECCNs, created to alert readers that computers, telecommunications equipment, and radar—and parts, components, accessories and attachments "specially designed" therefor are controlled by ECCN 3A611 (if specially designed for military use) in CCL Categories 4, 5 (Part 1) and 6, respectively (new cross reference ECCNs and the Categories in which they would appear are: 4A611, Category 4; 5A611, Category 5, Part 1; and 6A611, Category 6) would not be needed if these devices were placed there . We believe placing these devices in their appropriate categories of the CCL is the best way to reduce confusion and misclassification of these articles.

D. Grace Period

Rockwell Collins' assessment of the proposed changes to category XI shows we have a significant number of parts, components and accessories currently captured within category XI(c) of the USML. We believe the majority of these category XI(c) items will be moving to the new CCL 600 series. The task of evaluating each of these items to determine the appropriate CCL classification they should be moved to once final rules are published will be significant. To allow adequate time to address these changes, along with licensing and other related process changes required, a minimum grace period of at least six months would help ensure that industry has the time necessary to properly comply with the new regulations.

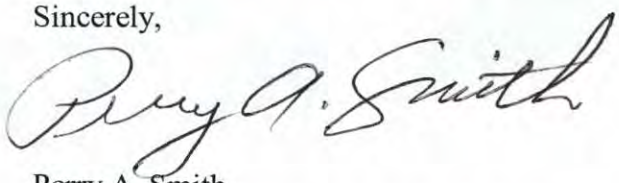
III. Conclusion

As drafted, the proposed changes to Category XI represent a positive step forward in establishing a clearer/bright line between the USML and CCL. However, as noted above, unless further changes are made in other parts of the regulations to 1) clarify the "specially designed" definition, 2) create a mechanism to eliminate dual licensing, and 3) create comparable license exceptions within the EAR, we believe the proposed changes have the effect of only shifting licensing from one agency to another, and potentially increasing the overall licensing and administrative effort required to conduct defense trade.

Rockwell Collins is fully committed to supporting the Administration's efforts in moving export control reform forward. We greatly appreciate the opportunity to provide comments to the proposed changes.

If you have any questions or would like to discuss the comments provided above, feel free to contact me directly at 319-295-5396, or via email at pasmith@rockwellcollins.com.

Sincerely,



Perry A. Smith
Director, Export and Import Compliance
Rockwell Collins, Inc.

→ Charged to innovate. Driven to solve.™

Stephanie C. Hart
Director, Export Compliance

ION Comments on the
Amendment to the International Traffic in Arms Regulations:
Revision of U.S. Munitions List Category XI and
Definition for ‘‘Equipment’’

Re: Comments on RIN 1400–AD25

DEPARTMENT OF STATE
22 CFR Part 121
RIN 1400–AD25
[Public Notice: 8091]
Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for ‘‘Equipment’’

BACKGROUND

ION Geophysical Corporation is a leading provider of geophysical products, services, and marine seismic solutions for the oil and gas industry. ION's offerings are designed to allow Exploration & Production operators to obtain higher resolution images of the subsurface to reduce the risks of exploration and reservoir development and to enable seismic contractors to acquire geophysical data safely and efficiently. ION provides equipment for both marine and land-based seismic acquisition.

We appreciate the opportunity to comment regarding the Proposed Rule for Revision of U.S. Munitions List Category XI and Definition for ‘‘Equipment’’. We provide our input below.

PARAMETER ANALYSIS

Within the proposed rule, ION has concerns about the following four paragraphs: (a)(1)(iv), (a)(1)(vi), and (c)(11) and (c)(12).

§ 121.1 General. The United States Munitions List.
* * * * *
Category XI—Military Electronics

(a)(1)(iv)

“(a)(1)(iv): Acoustic modems, networks, and communications equipment with adaptive compensation or employing Low Probability of Intercept (LPI);

Note 1 to paragraph (a)(1)(iv): Adaptive compensation is the capability of an underwater modem to assess the water conditions to select the best algorithm to receive and transmit data.”

Regarding (a)(1)(iv) above, ION’s marine acquisition systems do not utilize acoustic modems, networks and communications equipment with adaptive compensation. In the future, ION does not want to be precluded from the potential to use such equipment in its systems. Reliable

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underwater communications will be needed in commercial marine seismic applications. ION contends that the definition of adaptive compensation in Note 1 is overly broad. The definition needs to be narrowed substantially in order not to capture and over control commercial marine seismic applications of ION and our competitors both now and in the future.

We are submitting the ***Designing an Adaptive Acoustic Modem for Underwater Sensor Networks*** paper produced by University of California, San Diego's Department of Computer Science and Engineering (CSE) as an attachment with references for your review to demonstrate the "wide range of oceanographic applications including marine exploration, environmental monitoring and coastal surveillance" of adaptive compensation in commercial applications.

"There is a growing interest in using underwater networked systems for oceanographic applications. These networks rely on acoustic communication, which poses a number of challenges for reliable data transmission. The underwater acoustic channel is highly variable; each link can experience various conditions, which change according to environmental factors as well as the locations of the communicating nodes. This makes it difficult to ensure reliable communication. Furthermore, due to the high transmit power, the energy consumed in transmitting data is substantial which is exacerbated at lower data rates. The main challenge that we address in this article is how to build a system that provides reliable and energy efficient communication in underwater sensor networks. To this end, we propose an adaptive underwater acoustic modem which changes its parameters according to the situation."

- ***Designing an Adaptive Acoustic Modem for Underwater Sensor Networks*** by Lingjuan Wu, Jennifer Trezzo, DibaMirza, Paul Roberts, Jules Jaffe, Yangyuan Wang, Fellow IEEE, and Ryan Kastner, Member IEEE

This article illustrates the vast array of commercial uses for acoustic modems, networks, and communications equipment with adaptive compensation in marine seismic exploration as well as environmental monitoring and coastal surveillance. If this proposed rule is implemented without a more narrowed definition for adaptive compensation then the U.S. government will end up controlling equipment that is unquestionably in "normal commercial use." The proposed rule states quite clearly that "the U.S. Government does not want to inadvertently control items on the ITAR that are in normal commercial use" but if this broad definition of adaptive compensation is not limited in scope, then the three commercial industries mentioned in the article, specifically "marine exploration, environmental monitoring and coastal surveillance" will be severely and negatively impacted. In fact, our Electrical Engineering Director noted that if the language in Note 1 of (a)(1)(iv) is not changed then it's basically "thou shall not have any reliable underwater commercial communications."

(a)(1)(vi)

"(a)(1)(vi) Autonomous processing/control systems and equipment that enable cooperative sensing and engagement by fixed (bottom mounted/seabed) or mobile Autonomous Underwater Vehicles (AUVs)"

First, we maintain that the words "processing control system" and "cooperative sensing and engagement" must be plainly and clearly defined as those of us in the commercial industry do not understand what they mean. When inquiring to BIS regarding definitions for these terms, we were instructed to research the meanings conveyed publicly according to the Navy and

Department of Defense. Pursuing this path puts an unnecessary burden upon commercial industry to research unfamiliar military terms and guess which meaning actually applies when providing comments. Once these words are fully defined and provided publicly, then we respectfully request that State re-release the proposed rule so this segment can be fully vetted and comments can be submitted.

Second, if we assume that the aforementioned terms would apply to current marine seismic and oil and gas applications, then we know of two current commercial applications that could go from being controlled on the CCL on the EAR to being controlled as a military item on the ITAR.

1. Fairfield's autonomous nodes. We have attached a paper presented at EAGE by Fairfield Industries in 2005 called ***Multi-component Ocean Bottom Seismic Data Acquired with an Autonomous Node System*** for your review. Further information can be obtained at http://www.fairfieldnodal.com

2. Shell's Mars B development using ocean bottom sensors in 2007. See attached Wall Street Journal article entitled ***A Novel Ship Extends Shell's Reach*** for more information.

(c)(11) and (c)(12)

In addition, if the language in (a)(1) is not more narrowly and specifically defined to exclude existing commercial applications, then marine seismic parts, components, accessories, attachments, and associated equipment will be controlled in the (c)(11) and (c)(12) sections of Category XI. We are aware of a prior commodity jurisdiction related to (c)(12) that clearly states that these items are not regulated under the USML but are controlled under the EAR as commercial items.

DESIGN INTENT IS THE BRIGHT LINE

Currently, we have the bright line that the Export Control Reform Initiative (ECRI) intends to pursue – ***design intent***. It has successfully protected purely commercial items from being captured in the ITAR for decades but instead of creating exemptions within the USML to release the lower-level nuts and bolts from the higher level of control, the ECRI dictates that we integrate the USML and our CCL. The problem seems to be that the ECRI does not have the purely commercial industry's best interests at heart.

The way small-medium businesses see it is that the "higher fences" were created to control stringently our commercial goods even going so far as to capture them on the USML. We don't understand the reasoning behind building higher fences around purely commercial items and don't believe that this situation supports the goals of the initiative.

COMMENTS ON REGULATORY ANALYSIS AND NOTICES

The effect on small businesses has not been determined.

On page 70960, the Proposed Rule states:

"Small Business Regulatory Enforcement Fairness Act of 1996

> This proposed amendment has been found not to be a major rule within the meaning of the Small Business Regulatory Enforcement Fairness Act of 1996."

Given that changes of this magnitude incorporating commercial applications into the USML have never been made previously, we do not feel that the above statement sufficiently addresses the effect on small businesses. We contend that the effect of this proposed rule on small businesses has not been properly assessed. We respectfully request that State prepare a regulatory flexibility analysis so the effect on small entities can be accurately determined.

The proposed rule will increase the burden on businesses which is contrary to the Paperwork Reduction Act.

On page 70961, the rule states:

> "The Department of State is looking for comments on the potential reduction in burden."

If the proposed rule is implemented as is, there will be a substantial increase in requests for Commodity Jurisdiction determinations probably even duplicating efforts that were resolved in the past. We outline an example of this in the aforementioned paragraphs (c)(11) and (c)(12). In addition the increase in license applications for both the ITAR and EAR will increase and, because of the delays, will lead to lost business. Also, more commercial companies, such as ION, will need to register with the State Department and pay fees for each license application for the first time. The end result is that commercial products would be less competitive overall and the burden on industry grows.

ION'S CONCLUSION

The potential negative economic impact to our industry, U.S. marine seismic manufacturing and oil and gas companies overall would be immense if commercially available products are controlled under the ITAR versus the EAR. Commercial equipment used in marine oil and gas exploration is of vital economic importance to the U.S. and the global economy. The advancement and drive for new technology is based on the increasing global demand for energy and ever diminishing oil reserve replenishment rates. U.S. investment into new technology, manufacturing and operations is required to image deep and complex reservoirs to meet current and future energy needs. The U.S. will be at a major competitive disadvantage to other countries if higher walls are created to further limit access to these essential products and services.

We understand one of the original main goals of the Export Control Reform Initiative (ECRI) is to facilitate exports. We reason that adopting this proposed rule in its current form opposes this goal and that more time and attention must be spent to insure that the final rule does not capture and control equipment currently on the EAR's CCL that is unquestionably in "normal commercial use."

The President's National Export Initiative (NEI) set the goal of doubling U.S. exports by the end of 2014 to support millions of jobs in the States. As stated by President Obama in his 2010

State of the Union address, "Helping U.S. companies become more competitive internationally is a critical step to winning the future." As described above, this proposed rule, as presented, will undermine the President's NEI.

Thank you for the opportunity to provide input on this proposed rule. We appreciate that you solicit our feedback as part of the process. Please contact us directly if you have any questions regarding these comments.

Sincerely,

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Designing an Adaptive Acoustic Modem for Underwater Sensor Networks

Lingjuan Wu, Jennifer Trezzo, Diba Mirza, Paul Roberts, Jules Jaffe, Yangyuan Wang, *Fellow IEEE,* and Ryan Kastner, *Member IEEE*

***Abstract*—There is a growing interest in using underwater networked systems for oceanographic applications. These networks often rely on acoustic communication, which poses a number of challenges for reliable data transmission. The underwater acoustic channel is highly variable; each link can experience a vastly conditions, which change according to environmental factors as well as the locations of the communicating nodes. This makes it difficult to ensure reliable communication. Furthermore, due to the high transmit power, the energy consumed in transmitting data is substantial which is exacerbated at lower data rates. The main challenge that we address in this article is how to build a system that provides reliable and energy efficient communication in underwater sensor networks. To this end, we propose an adaptive underwater acoustic modem which changes its parameters according to the situation. We present the design of such a modem and provide supporting results from simulations and experiments.**

***Index Terms*—acoustic modem, underwater sensor networks, wireless communication.**

I. Introduction

UNDERWATER sensor networks have a wide range of oceanographic applications including marine exploration, environmental monitoring and coastal surveillance. The preferred mode of wireless communication in these networks is based on acoustic signals. This is due to the fact that radio frequencies suffer high attenuation underwater. Optical communication is possible but only in clear water at relatively short distances. Unfortunately, acoustic communication is challenging due to large and variable multipath delay spread, Doppler shifts and long propagation delays [1].

Underwater networks are envisioned to consist of tens to hundreds of nodes that are deployed in 3-dimensional space, in different configurations [2]. A concrete example is a sensor network consisting of freely floating autonomous drifters for underwater exploration [3]. In such scenarios, the acoustic channel can vary considerably between different transmitter-receiver pairs. This is due to the significant variation in the nodes' positions, the extent of motion between them, and the topography of the ocean environment. For example, in moored oceanographic applications, where nodes are deployed at different depths in a static configuration, the channel experienced by nodes closer to the bottom of the ocean is different from those near the surface due to variations in signal reflection and refraction across different water layers. In networks consisting of mobile vehicles, additional variability is introduced due to the dynamics of the ocean environment and the relative motion between the vehicles.

To ensure reliable communication, we must choose the modem parameters for worst case channel conditions. Unfortunately, this often leads to communicating at lower data rates than are practically possible. Moreover, due to the high transmit power of acoustic modems (often tens of watts), a lower data rate results in a substantial increase in the energy consumed per bit. Since devices in an underwater sensor network are generally battery operated, energy efficient communication is crucial. The essential challenge that we address in this paper is how to provide reliable and energy efficient acoustic communication for underwater networks by designing an adaptive physical layer.

To this end, we propose an underwater acoustic modem that adapts its data rate and modulation scheme to the channel conditions. This idea is also motivated by previous observations that adaptive modulation is key to maximizing both channel capacity and channel efficiency at the physical and MAC layers [4]. As a result of such adaptations nodes that experience a more favorable channel can communicate at a faster rate, thereby saving energy. Alternatively, if the channel multipath increases, a node automatically chooses a lower rate to avoid intersymbol interference. These adaptations are performed on a link by link basis. The major contribution of this article is an adaptive modem architecture. We describe its main signal processing and control components and motivate our design via simulations and actual ocean experiments.

Prior work on acoustic modem design also recognizes the fact that communication performance underwater has a strong dependence on the deployment environment. Consequently, modems with adaptable features have been previously proposed. For example, in order to deal with different channels, the Woods Hole Micro-Modem, which is widely used in the research community, has two operation modes: a low data rate FSK mode and a high data rate PSK mode [5]. Other examples include a dual-mode acoustic modem [6] and a software modem [7]. The dual mode modem can switch between two modulation schemes - FH and DSSS according to channel

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signal to noise ratio (SNR) [6]. The software modem allows the user to select a desired modulation technique, data-rate and frame length [7]. These modems require the user to set certain communication parameters prior to deployment and they are not designed to adapt to a variable channels in real-time, after the network is deployed. We aim to design a modem architecture that can be dynamically changed either before deployment or during its operation.

The rest of this article is organized as follows. In Section II, we describe our adaptive modem architecture focusing on the major components: channel estimation, symbol synchronization and modulation. Section III provides simulation and experimental results. We conclude the paper and present future work in Section VI.

II. Adaptive Acoustic Modem Design

Underwater acoustic modems consist of three fundamental components as shown in Fig. 1: a transducer, an analog transceiver and a digital hardware platform for signal processing and control. This article focuses on the design of the physical layer on the digital platform.

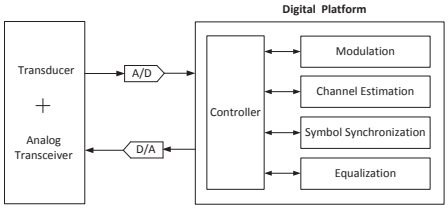

Fig. 1. An example adaptive acoustic modem design

In the following we provide details about the major parts of the digital hardware platform. In each case, we give a general description of its function, discuss the parameters that can be adapted, and describe options that we studied in our experiments.

Controller: The controller orchestrates the digital platform. This includes moving data to and from the analog transceiver, setting the parameters for the various parts of the digital hardware, and ultimately interfacing with higher level network stack.

Modulation: There are many different types of signals used for underwater communication. These include FSK [5], PSK [8], OFDM [9], DSSS [6], [10]. While an adaptive modem can ideally switch between any modulation scheme, we studied FSK and DSSS in our experiments. FSK is a fairly simple and widely used modulation scheme in underwater communication due to its intrinsic robustness to time and frequency spreading. Our receiver uses a non coherent energy detection demodulation method [11]. In DSSS, symbols are spread in frequency domain by multiplying with a spreading code. We used a DSSS waveform based on Walsh and m-sequence [10].

Channel Estimation: A major component of an adaptive modem is the ability to change aspects of the modem including selecting a modulation scheme, the data rate, the transmit power and other configurable portions of the design. Many of these depend upon current and future characteristics of the acoustic channel. Therefore channel estimation is an important part of any adaptive modem.

The Doppler shift, channel path gains and SNR are some of the important channel state information that must be measured and predicted. Prediction is particularly important since sound travels slowly (1500 m/s) and some channel characteristics vary on the order of seconds or faster. Ideally, the receiver will measure the channel characteristics and feed it back to the transmitter. This requires estimation at least one transmission in advance. Some work has been done such as a channel prediction scheme is proposed for adaptive modulation in [12].

Our experiments use a chirp signal for estimating the channel due to its good autocorrelation properties. Using a chirp signal, the Doppler shift, multipath delay spread and SNR are computed as follows.

Doppler shift is induced by the relative motion between the transmitter and receiver as well as by the motion of the medium. The Doppler scaling factor is calculated as $\Delta = T_{rp}/T_{tp} - 1$, where T_{tp} and T_{rp} are the duration of transmitted and received data packets respectively. The packet structure designed to calculate Δ is shown in Fig. 2. The received signal correlates with the original chirp and the time duration between two correlation peaks, T_{rp} is computed. After that, we calculate Doppler shift $\widehat{f} = \Delta \times f$ where f is the carrier frequency.

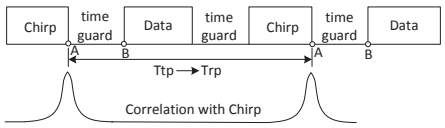

Fig. 2. Packet length measurement using chirp signal

Multipath is a cause of intersymbol interference (ISI), which is a limiting factor for robust high speed underwater communication. The multipath intensity profile can be calculated using a form of the Matching Pursuits algorithm [10]. In our experiments, we calculate the multipath delay spread using the previously discussed chirp signal. The received chirp is correlated with the original chirp to generate the amplitude delay profile. The RMS of the amplitude delay profile is used as a threshold and the delay spread is computed as the time difference between the path with maximum amplitude and the last path whose amplitude is greater than the RMS value.

Our experiments determine the SNR as the ratio of signal's variance to that of the ambient noise. As shown in Fig. 2, the time guard after the chirp is used to calculate the noise power.

Symbol Synchronization: It is critical that the receiver correctly determine the beginning of the incoming data. This is an important part of any digital communication and there are many techniques for symbol synchronization. We perform synchronization by correlating the received signal with a known preamble. We studied two different signals for candidate preambles, namely a Gold code and a chirp signal.

We used a Gold Code of length fifteen as the preamble, and an orthogonal Gold code to estimate the noise variance. Based on the noise variance a dynamic threshold was generated. The

start of the packet was determined to be when the received signal has a maximum correlation with the known preamble and exceeds the noise threshold [13].

We also tested a chirp signal as the preamble for synchronization due to its autocorrelation properties. We can also use the same chirp for synchronization and channel estimation to minimize the amount of data transmitted. As shown in Fig. 2, a correlation peak is detected at point A, and after a time guard of length T, the receiver starts to demodulate at point B which is the expected start of the data sequence.

Equalization: Long multipath delay spreads in the underwater channel make channel equalization significantly more difficult than radio channels and thus play an important role in the modem design. A significant number of equalization techniques have been proposed [14]. These are not a direct focus of this article, but must be mentioned in the design of a modem due to their importance in achieving low BER.

III. Simulation and Sea Test Results

To evaluate the proposed adaptive modem, we did both simulations and sea tests. We executed a set of simulations to find the best data rates for different links in a network and to understand the potential benefits of modifying the data rates on a per link basis. We also performed sea tests to evaluate the performance of the major components of the proposed adaptive modem in a real environment.

The parameters for the chirp, FSK and DSSS modulation schemes used in our simulations and sea tests are given in Table I.

TABLE I
CHIRP, FSK AND DSSS SIGNAL PARAMETERS

CHIRP SIGNAL PARAMETERS	
Sweep mode	up-chirp
Initial frequency	8 kHz
Maximum frequency	12 kHz
Sweep duration	50 ms
FSK & DSSS SIGNAL PARAMETERS	
FSK/DSSS carrier frequency	9 kHz
FSK/DSSS sampling frequency	192 kHz
FSK space frequency	10 kHz
FSK mark frequency	11 kHz

A. Simulation Results

We performed simulations using the Actup underwater acoustic propagation modeling software [15]. It generates the amplitude and delay profile of the received signal. The Actup simulations require that we set environmental parameters such as the communication range, water depth and the sound speed profile, and specify the location of the transmitters and receivers. We generated the underwater acoustic channel for five different transmitter and receiver pairs which were placed at different locations in the water column as shown in Fig. 3. The amplitude and delay profiles for links 1 and 5 are shown in Fig. 4. We observe that the two links have fairly different profiles which supports the fact that nodes in the underwater sensor network are likely to experience different channels.

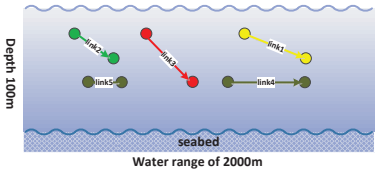

Fig. 3. Underwater environment and the sensor nodes in Actup simulation

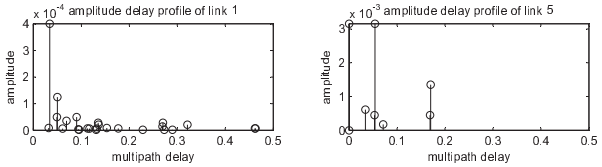

Fig. 4. Multipath amplitude and delay profile of link 1 and link 5

For this network scenario, we found the best data rate for each link in simulations using the channels generated in Actup. The simulations were performed for the FSK and DSSS modulation schemes. For each modulation scheme, the BER was computed over a range of data rates by demodulating 10 packets each containing 102 bits. The maximum data rate whose BER was smaller than 10^{-2} was considered as the best rate for any specific link. The simulation parameters for the described network scenario for each link and the corresponding best data rate are given in Table II.

TABLE II
BEST DATA RATES FOR DIFFERENT CHANNEL LINKS

Actup Setup Parameters (m)				Data Rate (bps)	
Link	Tx depth	Rx depth	Distance	FSK	DSSS
link1	20	40	200	200	1900
link2	20	40	150	400	1900
link3	20	60	200	100	1900
link4	60	60	200	300	600
link5	60	60	50	40	800

The results show that the best data rate varies for different links in a network; it changes from 40 bps to 400 bps for FSK, and from 600 bps to 1900 bps for DSSS. Our results also show that rate adaptation can save considerable energy. For example in the case of FSK modulated transmissions, if we consider the best fixed data rate that allows reliable communication under the worst channel condition, all the links must communicate at 40 bps. The total energy consumed for each link transmitting one symbol is $0.125 * P_t$, where P_t is the transmitting power. Alternatively if the nodes perform rate adaptation and communicate at their best data rate, the total energy consumed is $0.0458 * P_t$. Therefore, rate adaptation gives an energy saving of 63.4%. In the same way, an energy saving of 45.8% is possible for DSSS. Moreover, faster data rates decrease the probability of collisions between different links, which in turn causes fewer retransmission and therefore costs less power. These results motivate the idea of an adaptive modem for underwater sensor networks.

B. Sea Tests

To evaluate the performance of the major components of our adaptive modem we performed experiments in the Pacific

Ocean in May 2011. The deployment setup is shown in Fig. 5. The transmitter was located at UC San Diego Scripps Pier, 20 feet below the water surface and the receiver was attached to the bottom hull of a boat residing at different locations. Data was collected at two sites at distances of 265m and 638m from the transmitter. For each site, FSK and DSSS data was transmitted at six different data rates. At each data rate, 20 packets containing 2040 symbols were transmitted.

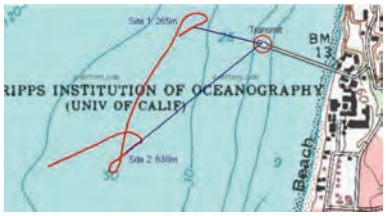

Fig. 5. Sea test setup (the red line is the route of the boat)

The results showed that the chirp signal had a better synchronization performance compared to the Gold code. While the chirp was able to successfully synchronize to the start of the data sequence for all data packets, the Gold code could only successfully synchronize 68% of the packets at Site 1 and 70% of the packets at Site 2. This indicates that the chirp is a good candidate for channel estimation as well as symbol synchronization.

We computed the BER for FSK and DSSS modulated data when the chirp signal was used for packet synchronization. The results are summarized in Table III. We observe that the BER increases with data rate likely due to intersymbol interference. Further, the results show that DSSS modulation outperforms FSK. Finally, we observe that the average BER at Site 2 is higher than that at Site 1. To explain this, we estimated the channel for both sites as shown in Fig. 6. The figure shows that the Doppler shift and the multipath delay spread are both higher for Site 2 compared to Site 1. These sea test results correspond with our Actup simulation results in the sense that BER varies significantly with the data rates and channel between the sender and receiver.

TABLE III
SEA TESTS BER FOR SITE1/SITE2

Data Rate	BER of FSK (%)	BER of DSSS (%)
50	9.67 / 7.99	0.22 / 2.36
100	19.33 / 16.62	1.47 / 1.86
200	12.58 / 27.39	1.53 / 6.40
300	21.86 / 27.78	0.78 / 7.07
400	21.67 / 31.75	3.56 / 13.58
500	35.26 / 40.60	16.97 / 32.30

IV. Conclusion

This article makes a case for an adaptive acoustic modem in underwater sensor networks. We describe the potential benefits of the adaptive modem and describe a general digital hardware platform architecture. We perform a set of experiments and sea tests that quantify the benefit of different modulations, types of channel estimation and symbol synchronization. The results show that rate adaptation can lead to substantial energy savings while ensuring reliable communication. Furthermore, they show that a chirp signal is a good candidate for symbol synchronization and channel estimation. The simulations and sea tests indicate that DSSS modulation consistently outperforms FSK. Currently, we have finished the design of the major components and are building our system using hardware and software co-design implementation on an FPGA platform. Eventually our proposed adaptive modem will be able to change its modulation scheme and data rate automatically according to channel conditions in real-time.

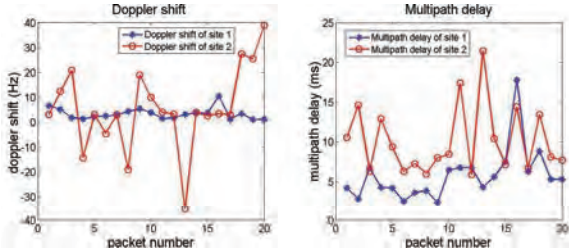

Fig. 6. Doppler shift and multipath delay estimate for sea test.

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B022 Multi-component Ocean Bottom Seismic Data Acquired with an Autonomous Node System

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Abstract

Multi-component ocean bottom seismic (OBS) data for oil and gas exploration have traditionally been acquired with systems in which many seismometers are physically linked with a cable. An alternative approach is to record data utilizing a set of distributed nodes, each operating autonomously. In such a system each node marks time and records the sensor outputs continuously for the duration of its deployment on the seafloor, which may be days or weeks. The high degree of flexibility in the receiver geometry permitted by a node based system is a motivating factor for employing nodes for some geophysical objectives, such as wide azimuth imaging. The data quality issues for node based OBS recordings are much the same as those for cable based acquisition: vector fidelity, coupling, bandwidth, signal-to-noise ratio, and repeatability. We acquired data in the deep water Gulf of Mexico with six test nodes and analyzed the data with respect to these key issues.

Physical Description of a Node

Cylindrical in shape (diameter 22.5 inches, height 10 inches) and machined from a single piece of aluminum stock, the unit presents a rugged exterior (Figure 1). Geophones and electronics are contained entirely within the case, while a hydrophone contacts the water from inside a recess in the case wall. Rechargeable batteries occupy the bulk of the interior and contribute significantly to the unit's weight (200 lbs in air). Seismic data, stored in flash memory, are downloaded through a USB interface on recovery of the unit. Compass and tilt measurements—the geophones are fixed, not gimbaled—are also recorded. The unit is designed for 28 days of continuous 4-component recording at 2 ms sample interval. It has been successfully pressure tested to a water depth of 10000 ft.

Gulf of Mexico Field Test – Overview

Our field trial was conducted in May 2004 approximately 200 miles south of the city of New Orleans. At this location, not far from the Sigsbee Escarpment, water depth is 4100 ft and the seabed is gently sloping. A remotely operated vehicle (ROV) was used to deploy a total of six nodes along a straight line over a distance of 990 ft. Two of them (Nodes 5 and 6) were positioned just 10 ft apart. (See Figure 2.) Video indicated, and tilt sensors later confirmed, that the ROV was successful in placing the units level on the seabed. Typically, each sank one or two inches into the muddy sea bottom. No effort was made to orient the units along a fixed azimuth. Six gun lines, headings separated by 60 degrees, formed a wagon wheel shooting pattern with the nodes located at or near the wheel's center. The maximum source-receiver offset obtained was 22,000 ft. At the end of the survey, one of the gun lines was acquired twice more, with the ROV lifting and replanting the nodes between passes.

Data Quality

The multi-component data in Figure 3 are representative of the general quality, bandwidth, and signal to noise ratio characteristics of all the data acquired in this experiment. Each record is a common receiver gather of the output of the indicated hydrophone or geophone for about 200 shot points along a single sail line in the acquisition wagon wheel. The geophone data have been processed to true vertical and horizontal by vector rotation of the three orthogonal field components, but the transformation is small as the normal-to-the base-plate component was less than 4 degrees off vertical for all nodes. The geophone data have been scaled up to compensate for sensitivity difference with the hydrophone. A divergence correction for spreading loss has also been applied. We observe broadband (greater than 100 Hz in the shallow section) and coherent hydrophone data. We observe vertical geophone data that are very comparable to the hydrophone data in coherence, bandwidth, and phase (for up going waves) which should allow for effective multiple attenuation in PZ summation. Some shear-like energy is observed on the vertical component but it is not severe in this area. The horizontal geophone components are characteristically lower frequency but very coherent and are dominated by energy whose moveout is consistent with PS converted wave reflections.

Vector Fidelity

It has been widely reported that accurate measurement of earth motion by multi-component sensors cannot be taken for granted and methods to assess and induce vector fidelity have received considerable attention (see, for example, Gaiser 1998; Dellinger et al., 2001; Woje et al., 2002; Fjellanger et al., 2002). Concentrating on the horizontal components, we find, as in Gaiser (2003), that orientation analysis is a straightforward and useful indicator of fidelity. For each source location, the data are rotated and the orientation producing minimum energy on a reference component is noted. Adjusting for source-receiver azimuth, an estimate of the unit's orientation is obtained. Typically, the energy is measured in a window containing the direct arrival. (On one occasion, in shallow water, we used a Scholte wave and obtained similar, though somewhat noisier, results.) No variation in unit orientation versus azimuth is an indication of vector fidelity, while the signature of infidelity is two-theta periodicity. An orientation analysis for one of our nodes is shown in Figure 4a. For comparison, Part b of the figure is a simulation of vector infidelity.

Repeatability

In the course of a production 3-D acquisition program, it may be desirable to retrieve a node for the purpose of intermediate data harvesting and at the same time replace it with a new node with fresh batteries, all while shooting continuously. Also, effective time-lapse 3-D data acquisition requires that a second recording at a sea floor ground station reproduce the first in all aspects unrelated to actual subsurface changes. Precisely orienting a node in the second deployment to match the orientation in the first deployment may not be practical. To test the repeatability of data acquired in independent node deployments one of the sail lines in the wagon wheel pattern was shot three times. Between each shooting pass, nodes were retrieved and redeployed at approximately their original locations, but with different orientations. Moreover, on the third pass several units were deliberately inclined more than 20 degrees and were pressed into the soft sediment. Figure 5 is one example of the degree of repeatability observed of all nodes. Here we compare the derived vertical components computed from their respective orthogonal geophones triplets from the first and third passes.

Conclusion

High quality seismic data can be acquired by using rugged one piece autonomous nodes that have been deployed by ROV in deep water. In our test area we observe wide bandwidth, high signal-to-noise ratio vertical geophone data that are comparable to our hydrophone data. Horizontal geophone data are more limited in bandwidth but appear coherent and dominated by PS converted wave energy. Orientation analysis indicates good vector fidelity for the horizontal geophones. We attribute this to the unit's symmetry about a vertical axis. Data acquired using ROV deployed nodes show a high degree of repeatability when nodes are redeployed and shot points reacquired, even when the nodes are highly disturbed from their original orientation and inclination. Vertical geophone data can be derived from non-gimbaled multi-component geophones without careful leveling during layout.

References

Gaiser, J. E., 1998, Compensating for variations in geophone coupling of OBC data: 60th EAGE meeting, Expanded Abstracts, 5-48.

Gaiser, J. E., 2003, Vector-fidelity differences between p-wave first breaks and ps-wave reflections - implications for compensation of full-azimuth data: 65th EAGE meeting, Expanded Abstracts, C-33.

Dellinger, J., Clarke, R., and Gutowski, P., 2001, Horizontal vector infidelity correction by general linear transform: 71st SEG meeting, Expanded Abstracts, 865-868.

Fjellanger, J. P., Aanensen, O., and Ruud, B. O., 2002, Geophone coupling and QC of vector fidelity: 64th EAGE meeting, Expanded Abstracts, E-01.

Woje, G., Berg, E., Rykkelid, J. I., Svendsen, O., and Aanensen, O., 2002, Vector fidelity analyses of seabed seismic data: 64th EAGE meeting, Expanded Abstracts, E-03.

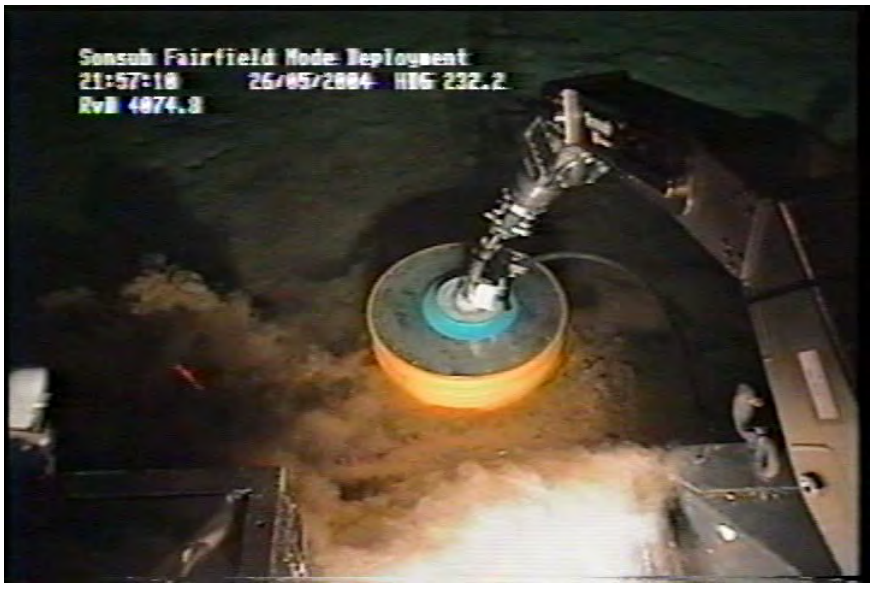

Figure 1. Deep water deployment of an autonomous node by ROV

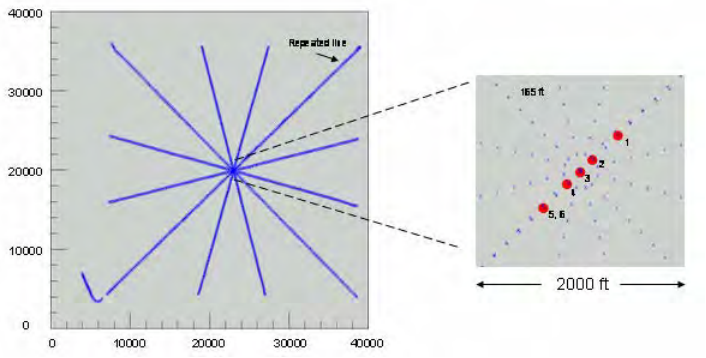

Figure 2. Wagon wheel shooting pattern. Source spacing is 165 ft. Zoom indicates layout of six test nodes. Coordinates are in feet.

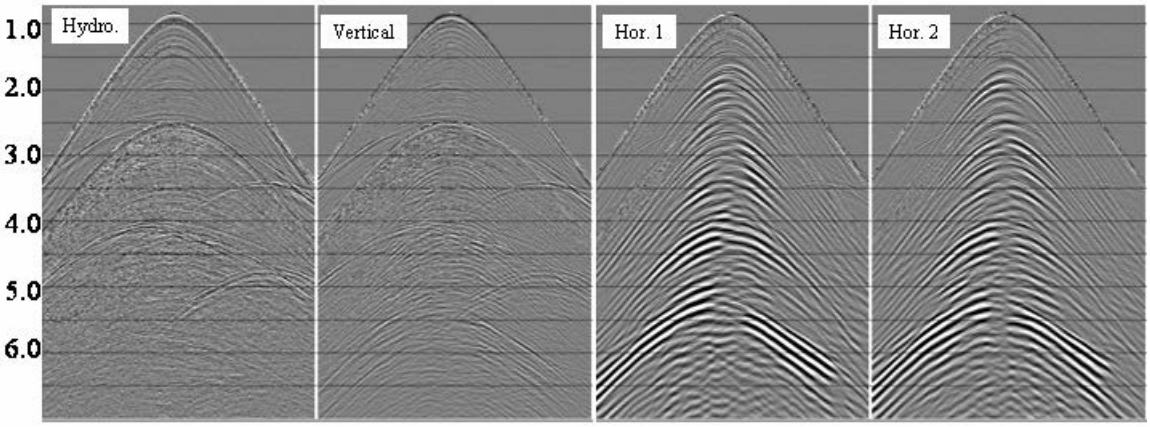

Figure 3. Common receiver gather of 4-C data from a node for a single shooting line in the wagon wheel

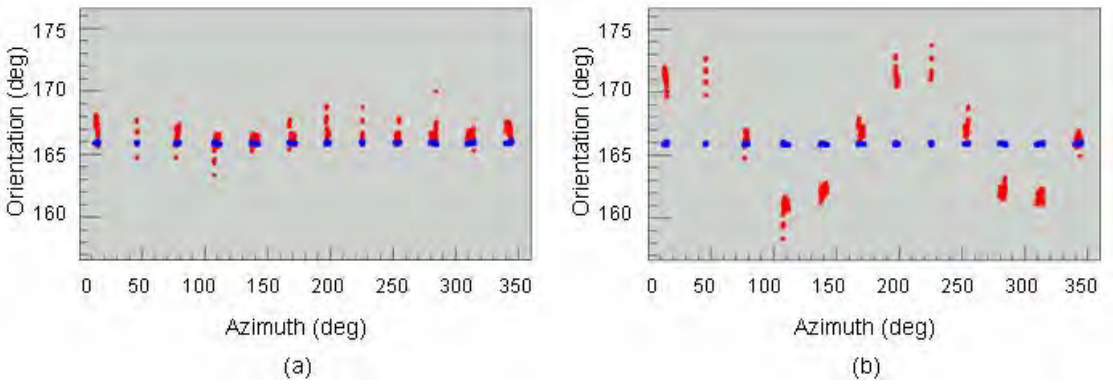

Figure 4. (a) Orientation analysis for Node 2. The node's field compass measurement (blue) is essentially constant with a value of 165.9 degrees. Estimated orientation values (red) have mean 166.6 degrees and standard deviation 0.75 degrees. Input data is from a 200 ms window centered on the direct arrival. Source-receiver offsets are in the range 4000-20000 ft. Clustering is a result of the shooting geometry. A total of 983 shots were included in the analysis. (b) Same as (a) but with data from one of the horizontal geophones scaled by a factor of 1.2. The result is two-theta periodicity in the unit's apparent orientation

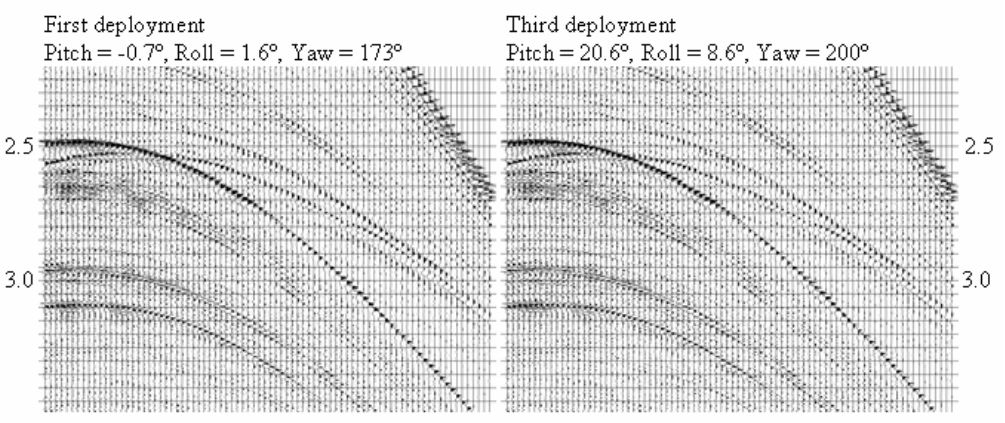

Figure 5. Vertical geophone components computed from orthogonal geophone data for (left) a nominally level unit and (right) a highly tilted unit. Roll and pitch are rotations about the Horizontal 1 and 2 axes respectively. Yaw is rotation about the vertical axis.

The Wall Street Journal

Thursday, January 3, 2013

A Novel Ship Extends Shell's Reach

By Steven Rosenbush

ABOARD THE NOBLE BULLY 1 IN THE GULF OF MEXICO—This new type of drill ship developed by **Royal Dutch Shell** PLC to help extract oil at once-inaccessible ocean depths, doesn't look anything like a conventional vessel of its kind.

Equipped with a new generation of digital technologies, the Noble Bully 1—a 30,270-gross-ton behemoth as long as two football fields—can guide a 21.5-inch-wide drill bit thousands of feet below the water's surface to the center of a target about four square feet in size.

The ship's design helps Shell drill wells faster, more safely and at a lower cost than ever before, and is part of the technological revolution fueling North America's oil-and-gas boom, increasing the continent's energy independence.

These new technologies haven't dispelled all Shell's production challenges. On Wednesday, the company was struggling to rescue a drilling rig that ran aground this week in rough waters off the Alaska coast. (Please see related article on page B2.)

But innovations in information technology, including powerful new data-imaging tools and predictive analytics, are making it possible for companies like Shell, **BP** PLC and **Chevron** Corp. to map and exploit previously uncharted oil-and-gas fields locked in shale and "tight" rock formations, or buried far below the ocean floor and obscured by thick layers of salt.

"Since I started out, the water has gotten deeper, the wells have gotten deeper and the technology has gotten much more challenging," says David Loeb, Shell's deep-water operations manager in the Gulf of Mexico, who joined the company in 1975.

Seven to eight feet narrower and 160 to 260 feet shorter than conventional offshore drilling vessels, the Noble Bully 1 can operate in depths of 150 feet to 8,250 of water—and as deep as 12,000 feet, with some safety upgrades. Shell says it can drill as much as 40,000 feet below the seafloor. A second ship using the same design, the Noble Bully 2, operates off the coast of Brazil.

Shell says it hasn't had a major spill in more than 30 years of deep-water drilling, but on Tuesday it reported that one of its drilling rigs, the Kulluk, struck an island about 300 miles southwest of Anchorage.

No injuries or spills were reported as Shell and the Coast Guard began salvage operations, but the accident handed ammunition to critics of Arctic drilling, who say the region's extreme weather and remoteness makes the chances oil spills and worker injuries there too high.

The Noble Bully 1's main distinguishing feature is its fully enclosed white tower, which replaces the open-derrick structure that has been used in oil rigs for generations and looks something like a smaller version of the Eiffel Tower. The enclosed tower encompasses two hoists—one for active drilling, and the other for linking together 40-foot sections of pipe to create drill pipes that extend from the ship into the earth, miles below.

Although smaller, Shell says the Bully has as much thrusting power and storage capacity as conventional drilling ships.

The Bully's technology, which includes built-in GPS, wind sensors, motion sensors and compasses, a hydraulic system, and computer-controlled thruster propellers on the bottom of the vessel, allows Shell to drill wells with new precision.

Mr. Loeb helped conceive and now manages the Bully, which was developed by Shell and Frontier Drilling, now owned by **Noble** Corp. It is drilling wells for Shell in the Mississippi Canyons section of the Gulf about 120 miles south of New Orleans.

That's an important place in the history of deep-water drilling. Shell made the first deep-water discovery there in 1975. And the area was the site of the historic Deepwater Horizon oil spill. The Horizon, drilling about 40 miles south of the Louisiana shore, at the Macondo field, exploded and sank in 2010, killing 11 people and causing catastrophic economic and environmental damage to the region.

The Noble Bully 1 is operated by Noble, which co-owns it with Shell. The vessel is drilling wells for a new platform, to be called Olympus, which will provide the surface infrastructure for two deep-water-developments, West Boreas and South Deimos. The Olympus will be a tension leg-platform, meaning it will float in the sea like a cork, tethered to the ocean floor with cables.

The project, known as the Mars B development, has relied on new technology from start to finish. Shell explored the area in 2007, using a new kind of seismic technology called ocean bottom sensing, which replaced fixed cables outfitted with underwater listening devices with lighter, movable lines closer to the floor of the Gulf. Other companies also use the technology, Shell said.

The new sensors picks up more data than their predecessors from sonic blasts sent out by an exploration ship.

Then, Shell scientists working on shore analyze the data with artificial intelligence the company developed, and produces three- and four-dimensional maps of the oil reservoirs, using computer chips similar to those found in advanced videogames, and make the maps available to the crew.

The ship has unmanned submarines, equipped with robotic arms and high-definition video cameras, that, if needed, can be uided to the drilling operation on the ocean floor.

Noble operates the highly automated drill ship with 160 workers—40% fewer than required on a typical drill ship.

The savings in staff lowers operating costs and improves safety by reducing the number of people in the ship's drilling area. The smaller ship also contains less steel and uses less fuel than more conventional designs.

Shell says it has never had a major spill in 30-plus years of deep-water drilling, but safety is an almost constant topic of conversation aboard the Bully, where anyone—even visitors—have the authority to stop work if they think something isn't right, a ship's officer said.

In an increasingly automated work environment, chief drillers on the Bully sit in "drill chairs" and manipulate the speed and direction of the drill pipes using joy sticks and computer screens.

"Today, it is a whole lot safer," said Timothy Craft, a Noble veteran who worked his way up from roustabout and roughneck to assistant driller and is now training for a job as a chief driller.

"You don't have to worry about employees being in harm's way, you don't have to put your hands on as much. It is really great," he said.

Shell is just scratching the surface of automation, according to Jonathan Crane, its vice president of wells-technology deployment. He says that the judgment of veteran drillers—such as Mr. Loeb—is as much art as science. "Some of these guys are legendary, because of their intuition about how to move the drill," he says.

Mr. Crane's group is interviewing one of those legendary drillers, so that his experience and judgment can be captured in algorithms that automate the drilling process. Early experiments show that some of these algorithms are capable of matching or exceeding the performance of the average human driller, he said.

From: Adam Kelly [mailto:Adam.Kelly@Detect-Inc.com]
Sent: Monday, January 28, 2013 4:57 PM
To: DDTC Response Team
Cc: Gary Andrews; Doug McElwain
Subject: ITAR Amendment--Category XI and `Equipment

Detect has reviewed the document

Amendment to the International Traffic in Arms Regulations:
Revision of U.S. Munitions List Category XI and Definition for
``Equipment''

AGENCY: Department of State.

ACTION: Proposed rule.
RIN 1400-AD25
[Public Notice: 8091]

We respectfully request that urgent consideration is given to the following comments at that the wording is carefully revised before they are passed into effect because they appear to capture equipment for which the rule was never intended.

vi) Sea surveillance/navigation radar with free space detection of
1 square meter radar cross section (RCS) target at 20 nautical miles
(nmi) or greater range

This rule would apply to MANY marine radar systems or radars capable of being mounted on a ship. If a radar signal processor was constrained to 20 nautical miles or less does it comply? Does it not comply if it is mounted on a ship and the radar horizon prevents it seeing to 20nm, but it does apply if the same radar is mounted on a 400ft or higher cliff where it can see out to >20nmi at the horizon. This poorly written rule when widely interpreted can be a catch all for many currently legal radars and needs clarification.

(vii) Land or perimeter surveillance radar with free space
detection of 1 square meter RCS target at 5.4 nmi or greater range and
has a revisit rate of faster than once every sixty seconds;

This rule would apply to ANY marine radar that was mounted where it could also scan land (harbor surveillance for example) because most marine radars on the market can achieve a free space detection of 1 square meter RCS target at 5.4 nmi or greater range and
has a revisit rate of faster than once every sixty seconds. This rule is overly broad and captures almost all marine radars used in an area where it can scan land. The Rule must define the word Land and Perimeter much more precisely. You can't suddenly outlaw a whole class of radars freely available in the rest of the world. This rule captures many radar systems beyond marine radar, including avian radar systems made by my company.

(viii) Air surveillance radar with free space detection of 1 sq m RCS target at 85 nmi or greater range or free space detection of 1 sq m RCS target at an altitude of 65,000 feet and an elevation angle greater than 20 degrees

If the radar is constrained at the signal processor to process only returns from less than 85nmi is it legal? What if the radar has a elevation angle of less than 20 degrees on a level surface, but is mounted on an incline so it scans higher than 20 degrees, or the antenna could be adjusted with the addition of flexible waveguide or modification of the mounts to scan greater than 20 degrees elevation? This rule is not clear as to how it would be interpreted and enforced and should be rewritten to be more specific and not ambiguous.

(xvii) Radar having moving target indicator (MTI) or pulse-Doppler processing where any single Doppler filter provides a normalized clutter attenuation of greater than 50dB;

This rule is not clear in its intent, the intent is to prevent sub clutter target visibility in greater than 50dB of clutter. However as written it means if you remove more than 50dB of clutter by masking a range cell so nothing is visible then that is also against the rule because more than 50dB of attenuation is applied to that range cell. This rule can be misapplied to weighting schemes to reduce clutter such as STC in a Doppler filter as currently written. It is much too broad and open to misinterpretation to prevent many Doppler radars currently not in the rule from being exported or re-exported such as marine radars, weather radars and the avian radars made by my company. The rule needs to be clearer as to the intent that the rule is being applied and not so vague as to capture all Doppler radars.

(xviii) Radar having electronic protection (EP) or electronic counter-countermeasures (ECCM) other than manual gain control, automatic gain control, radio frequency selection, constant false alarm rate, and pulse repetition interval jitter;

We believe that this rule will apply to algorithms used to reduce in band interference from other radars in the frequency band such as used on ships radars to mitigate the interference from other navigations radars. If this technology is suddenly restricted then they can’t present a radar display with a clear enough image for safe navigation in congested water ways. The intent of this rule is to prevent civil radars from having anti electronic warfare capabilities, but as written does not allow for algorithms that remove inband interference with no military application in marine, weather and avian radar systems.

(xxiv) Radar employing waveform generation for low probability of intercept (LPI) other than frequency modulated continuous wave (FMCW) with linear ramp modulation;

As written this rule would apply to solid state marine radars and avian radar systems that use low power output. At a time of congested airwaves and limited bandwidth this rule runs counter to the governments strategy to better use available band width. The rule should be revisited and

rewritten to be less ambiguous and avoid capturing many civil radars that currently would not be effected including marine, weather and avian radar systems.

The proposed rule changes are overall, poorly written, overly broad and open to interpretation that will have negative impacts on technology that is freely available in the rest of the world such as marine, weather and avian radar systems, but also including security applications which were never the intended target of these rules. They should ALL be revisited and consultation take place with a WIDE industry input from developers of civil radar to ensure that the new rules are not overly broad and meet the intended national security interests. I am always available for further discussion.

Adam

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DeTect Inc

SEMICONDUCTOR INDUSTRY ASSOCIATION

January 28, 2013

Ms. Candace M.J. Goforth
Director
Office of Defense Trade Controls Policy
U.S. Department of State
2401 E Street, N.W.
Washington, D.C. 20037

RE: Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment" (*Federal Register* Notice of November 28, 2012; RIN 1400-AD25)

Dear Ms. Goforth:

The Semiconductor Industry Association ("SIA") is the premier trade association representing the U.S. semiconductor industry. Founded in 1977 by five microelectronics pioneers, SIA unites over 60 companies that account for nearly 90 percent of the semiconductor production of this country. The semiconductor industry accounts for a sizeable portion of U.S. exports.

SIA is pleased to submit the following public comments in response to the request for public comments issued by the State Department's Directorate of Defense Trade Controls ("DDTC") on proposed revisions to Category XI of the U.S. Munitions List ("USML") and a proposed definition for "equipment" ("Proposed Revisions").[1]

Central to the Proposed Revisions, and, in particular, the proposed revision of subparagraph (c) of USML Category XI, is the definition of "specially designed." Indeed, it is difficult to gauge the impact of the Proposed Revisions without knowing the definition of that term. Accordingly, SIA's comments focus on the definition of "specially designed."

SIA commends DDTC for narrowing the scope of subparagraph (c) of USML Category XI to cover only integrated circuits ("ICs") that are "Application specific integrated circuits" (ASIC) for which the functionality is "specially designed" for defense articles."[2] That proposed revision is a significant and much-needed improvement over the current open-ended coverage of subparagraph (c) of USML Category XI.

Nevertheless, the actual coverage of subparagraph (c) of USML Category XI remains unclear and subject to overly-broad interpretation, depending on the definition of "specially designed."

As noted in SIA's comments submitted in response to DDTC's proposed "specially designed" definition,[3] SIA has serious concerns about the "catch and release" structure of the

[1] Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment," 77 Fed. Reg. 70,958 (Nov. 28, 2012) ("Proposed Cat. XI Revisions").
[2] Proposed Cat. XI Revisions at 70,963.
[3] SIA, Comments on Proposed "Specially Designed" Definition, RIN-1400-AD22 (Aug. 3, 2012).

revised proposed "specially designed" definition. In particular, SIA is concerned that the "release" portions of the proposed definition will fail to exclude from the definition many integrated circuits ("ICs") that are not specially designed for controlled end items.

Prior to finalizing the "specially designed" definition, DDTC should:

- Include in subsection (a)(1) of the definition application-specific components of end items for which the control parameters or character can be ascertained;
- Restrict the "necessary" standard for components set forth in subsection (a)(2) to components for which there is no basis to assess the controlled parameters or character of the end item in which the component is incorporated;
- Create a note that provides an appropriate industry definition of ASICs; and
- Eliminate reference in subsection (b)(3) to "form and fit" for components of equivalent performance

These changes would properly reduce the scope of the "catch" in the proposed definition. They would also sharpen the exceptions in a more systematic way that is consistent with the derivative nature of components and reliant on widespread industry practice and understanding.

Of particular concern is the inclusion of "form," and "fit" in the language of paragraph (b)(3) of the proposed definition. For ICs, form and fit do not affect, nor are they a part of, design.

The four major steps in the design and manufacturing process for ICs are design, wafer fabrication, assembly/packaging, and testing. These steps are discrete and sequential. The design of an IC takes place and is completed before the wafer manufacturing step takes place. The final IC design is reflected in the wafers produced as a result of the wafer fabrication process and the die or "chips" on the wafers. Importantly, both the design and function of the IC is final at this time point in time — *i.e.*, at the point at which IC design is completed.

Wafer fabrication employs the IC design to produce individual die or "chips" on a semiconductor wafer, resulting in an IC. At that point the functionality of the IC exists in a useable form and is final. Assembly/packaging and testing have no impact on the functionality of the IC. While packaging and testing are part of the overall manufacturing process, they are not part of the IC design process and do not represent a modification of the original design reflected on the die or "chips" produced during the wafer fabrication step.

If the original IC circuit design was not "specific" to a controlled end use application, it is appropriate next to determine if the original circuit design of the IC was subsequently "modified" for a "specific" controlled end use application. (Such modification is known in the semiconductor industry as a die "revision" or a die "spin.")

In examining whether an IC is "specially designed" it is inappropriate to examine the processing, packaging and testing of the IC, as those steps have no impact on the functionality of the IC or on its design characteristics.

In short, two ICs that have the same design, function or performance capabilities based upon that same design should be deemed to be identical and therefore worthy of the same control status, regardless of any differences in form and fit between the two ICs. In addition, for the semiconductor industry, different part numbers do not signify different "models" or "versions" of the part when the parts share the same basic performance and capability based upon the common die/chip used in each of the specific parts with different numbers.

Given the reality that the form and fit of an IC do not and cannot alter the specific design and hence the functionality of the IC as contained in the die, form and fit should be eliminated in subsection (b)(3) of the revised proposed definition.

SIA urges DDTC to simplify and clarify the "specially designed" definition such that the definition captures the natural meaning of that term in a positive fashion without any need for overreaching and exclusions or exceptions. SIA also maintains that it is both logical and feasible to tie the control of a "specially designed" component to the related end item, but only to the extent that the "specially designed" component is peculiarly responsible for the controlled parameters or the controlled character as a whole of the end item.

If DDTC for whatever reason chooses not to implement SIA's recommendations for all components, then, at a minimum, DDTC should implement targeted modifications or additions to the Proposed Definition such that SIA's recommendations are implemented with respect to ICs. SIA strongly supports a semiconductor-specific note to the specially designed definition (a) which clarifies that, as applied to semiconductors, specially designed shall apply only to ASICs that are peculiarly responsible for achieving or exceeding the controlled parameters of end items into which they are incorporated. Further if "form and fit" are retained in (b)(3) we would strongly support a semiconductor-specific note which clarifies that as applied to ICs "form" and function should be determined at the wafer level when the design of the device is fully realized. "Fit" should be determined by accessing the pin out attached to the die.

Finally, with respect to proposed USML category XI (c)(2): SIA does not believe that there is a need for printed circuit boards ("PCBs") to be enumerated in category XI, and, for that reason, advocates the elimination of USML category XI (c)(2). Barring that, however, subcategory (c)(2), at a minimum, should be made parallel to subcategory (c)(1). Specifically, only PCBs that are application-specific and dedicated to a specific defense article or use should be captured by subcategory (c)(2) -- just as only ASICs are captured by subcategory (c)(1). "Patterned multichip modules" should not be included in the subcategory as that term is too broad and vague and its use likely will cause confusion and misunderstanding.

* * * * *

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 Orrick, Herrington & Sutcliffe LLP, if you have questions regarding these comments.

Cynthia Johnson
Co-Chair, SIA Trade Compliance Committee
Committee

David Rose
Co-Chair, SIA Trade Compliance

OHSUSA:752868646.1

From: Gary Andrews [mailto:andrewsgw57@gmail.com]
Sent: Monday, January 28, 2013 5:07 PM
To: DDTC Response Team
Subject: ITAR Amendment - Category XI and Equipment [TIME SENSITIVE]

Please see below my comments and concerns regarding the above referenced proposed changes:

Amendment to the International Traffic in Arms Regulations:
Revision of U.S. Munitions List Category XI and Definition for
``Equipment''

AGENCY: Department of State.

ACTION: Proposed rule.
RIN 1400-AD25
[Public Notice: 8091]

vi) Sea surveillance/navigation radar with free space detection of
1 square meter radar cross section (RCS) target at 20 nautical miles
(nmi) or greater range

This rule would apply to most marine radar systems or ship mounted systems. This rule if broadly interpreted will restrict many currently legal radars and needs clarification.

(vii) Land or perimeter surveillance radar with free space
detection of 1 square meter RCS target at 5.4 nmi or greater range and
has a revisit rate of faster than once every sixty seconds;

This rule would apply to any marine radar that was mounted where it could also scan land because most marine radars on the market can achieve a free space detection of 1 square meter RCS target at 5.4 nmi or greater range and has a revisit rate of faster than once every sixty seconds.

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As written this rule would apply to solid state marine radars and avian radar systems that use low power output. The rule should be revisited and rewritten to be less ambiguous and avoid capturing many civil radars that currently would not be effected including marine, weather and avian radar systems.

Regards,

Gary W. Andrews
12200 Lyndell Plantation Drive
Panama City, Florida 32407 USA

January 28, 2013

U.S. 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: Ms. Candace M. J. Goforth, Director, Office of Defense Trade Controls Policy, Department of State

RE: Notice of Proposed Rulemaking, ITAR Amendment – Category XI and 'Equipment'

Dear Ms. Goforth:

BAE System, Inc. wishes to thank the U.S. Department of State for the opportunity to provide comments on the proposed revisions to Category XI of the United States Munitions List.

From an export control perspective, BAE Systems, Inc. is concerned that while the proposed revision to USML Category XI represents significant progress towards creating a positive, enumerated list based on specific performance parameters, there are several instances in which the "specially designed" definition is being used to create imprecise "catch all" commodity descriptions that will remain on the USML. This approach of using "specially designed" as the only control criteria, runs counter to the objective of creating a positive, enumerated list of commodities that require the stringent controls of the International Traffic in Arms Regulations (ITAR) as well as the objectives of creating the "specially designed" standard for evaluating a particular commodity. The "specially designed" standard should not be used to bring non-critical parts and components up to the control level of the finished end item.

In proposed Categories XI(c)(2):

'Printed circuit boards or patterned multichip modules for which the layout is ''specially designed'' for defense articles in this subchapter;'

and XI(c)(9):

Antenna, and ''specially designed'' parts and components therefor'

The "specially designed" criterion is used to capture all components without regard to whether the objective performance of these items provides a critical military or intelligence advantage. In the case of the printed circuit boards, their inclusion with patterned multichip modules suggests there may be some confusion as to whether the intent is to cover complete boards with the packaged circuitry elements installed or the simple, raw patterned board with no other electronic devices incorporated into the assembly (the package substrate itself). Without further clarification, this language creates a large "catch all" category that will capture printed circuit boards (PCB's) and multichip modules(MCM's) that are specially dimensioned for a defense article, as well as those that may have some function as a defense article themselves.

BAE Systems, Inc. agrees that these commodities should be identifiable from a regulatory perspective and subject to proper export controls. While no individual manufacturer or exporter can identify all possible scenarios, BAE Systems, Inc., believes that this objective may be better served by more precisely identifying and listing PCB and MCM technologies that do provide a clear military or intelligence advantage, while assigning those that cannot be so identified to the appropriate "600 Series" of the Commerce Control List. This approach would allow for strict control over critical technologies and adequate export control of less sensitive technologies that eliminates the need for prior written approval of every proposed export and subsequent re-export and retransfer of these commodities during their service life.

In the case of XI(c)(9), the language appears to capture specially designed parts and components for antenna systems based on the performance of the complete end item and not whether the "specially designed" component produces the military and intelligence advantage described by the performance criteria.

For similar reasons, the inclusion of Category XI(a)(7) is also of great concern:

'Developmental electronic devices, systems, or equipment funded by the Department of Defense;'

With the proposed definitions of "equipment" that accompany this proposed revision to USML Category XI, this category could be conceivably be interpreted to bring items neither "specially designed" nor otherwise listed on the USML under the regulatory control of the ITAR. The criterion of "funded by the Department of Defense" is simply too broad and creates a large, imprecisely defined "catch all" category within the USML. This is inconsistent with the concept of a positive list of commodities to be subject to the control of the ITAR.

The proposed release mechanisms contained in the Note 1 to paragraph (a)(7) are inconsistent with the concept of a positive list and a bright line between the USML and CCL based on objective regulatory criteria that can be applied by both government and industry on a consistent basis. The need to obtain a commodity jurisdiction determination to resolve unclear descriptions in USML categories is exactly what should be avoided by establishing an appropriately positive USML.

The proposed contractual release method is also inadequate. Without clear connection to the concept of "specially designed" or the use of a positive list to create the bright line between the USML and CCL, it will be difficult to consistently administer this proposed release method in a way that is based on the technology based guidelines that the U.S. Government is trying to establish for an export control system.

In reading this proposed sub-category, it is unclear what intelligence or military advantage the U.S. Government is seeking to protect, or even if making it subject to the control of the ITAR is the correct approach. To remain consistent with the objective of export control reform, this sub- category should be structured as a limited, positively defined capture rather than an all-inclusive capture with very limited release mechanisms that do not utilize the positive regulatory changes that have been developed as part of the U.S. Government's export control reform initiatives.

Submitted on behalf of BAE Systems, Inc.

Justin Zimmer

Manager, International Trade Licensing
BAE Systems, Inc.
(703) 907-8345

From: Pilbeam, Adrian (KHHQ) [mailto:Adrian.Pilbeam@kelvinhughes.com]
Sent: Monday, January 28, 2013 5:12 PM
To: DDTC Response Team
Cc: Wade, Barry (KHHQ)
Subject: Comments on proposed changed to Munitions Category XI List Amendment to the International Traffic in Arms Regulations:

To Whom it may concern

Following review, at short notice, of the following proposed changed to ML XI section 3 relating to radars we have the following comments to make against the proposed rules. As we see it the revised rules are making a number of EAR 99 and open commercial products significantly more restricted in their licensing requirements and instead of making the rules more open and transparent, they are making the requirements more onerous to fair trade in a global market place.

Amendment to the International Traffic in Arms Regulations:
Revision of U.S. Munitions List Category XI and Definition for
``Equipment''

AGENCY: Department of State.

ACTION: Proposed rule.
RIN 1400-AD25
[Public Notice: 8091]

Radar systems and equipment, as follows:
(v) Any ocean surface surveillance radar with either a product of transmit peak power times antenna gain divided by minimum detectable signal of >165 dB, or a capability to distinguish a target of <10 dBsm from sea clutter with a false alarm rate of 10^{-6} or better in sea state 3 or higher, or both; **Please define the units of measure used for the transmit peak power calculation. Watts of Kilowatts makes a huge difference. What is the range of detection for the <10 dbSM in sea state 3? Again our VTS offering for commercial port applications could fall into this category.**
(vi) Sea surveillance/navigation radar with free space detection of 1 square meter radar cross section (RCS) target at 20 nautical miles (nmi) or greater range; **We currently have EAR99 radars that can meet this performance in free space. This pushes radars that are used for civilian VTS applications into the ML list. Is this the intention?**
(vii) Land or perimeter surveillance radar with free space detection of 1 square meter RCS target at 5.4 nmi or greater range and has a revisit rate of faster than once every sixty seconds; **We have radars that are used for wildlife studies that exceed that detection range, again they are EAR 99, but these are being used for flight safety and wildlife mitigation studies. Is the ML list the right place for this**

equipment. Is a maritime radar that is used for port and border security that has performance that exceeds this requirement also fall into this category?

General comment

A number of commercial radar processing functions improve clutter rejection and increases the detection of such targets, does this now mean these will fall into the ML list also?

The proposed rule changes are ambiguous and open to interpretations which will impact the world of maritime, weather and environmental radars that are used in a variety of applications including vessel traffic management and security, which are all commercial applications. Further consultation from industry is needed to address these concerns, to allow free trade and global competition in an open and competitive market place. As they draft is written, every time I install a marine radar on a ship in the US, it will be subject to ITAR.

Please do not hesitate to contact the undersigned should you require further input.

Best regards,

Adrian Pilbeam
Vice President

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KELVIN HUGHES
surveillance

SITUATIONAL INTELLIGENCE. THE WORLD OVER

Linda Dempsey

Vice President
International Economic Affairs

January 28, 2013

Candace M. J. Goforth
Acting Director, Office of Defense Trade Controls Policy
Department of State
Washington, DC 20520

Re: Amendment to the International Traffic in Arms Regulations – Category XI / Equipment (RIN 1400-AD25)

Via e-mail: DDTCResponseTeam@state.gov

Dear Ms. Goforth:

The National Association of Manufacturers (NAM) welcomes the opportunity to comment on amendments to the International Traffic in Arms Regulations (ITAR) to revise U.S. Munitions List Category XI (Military Electronics) and to provide a definition for "equipment."

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.

Revising USML Category XI (Military Electronics) to describe more precisely which military electronics and related defense articles warrant control on the USML is another vital step toward a more predictable, efficient, and transparent export control system. The NAM has long been a staunch advocate of rational export control policies that address evolving national security concerns and modern business practices. To further progress on sensible export controls, we would like to highlight a few recommendations and concerns.

Broad Issues

The NAM is concerned that this proposed rule, as written, would inadvertently capture commercial technologies on the USML. We believe a discussion on proprietary data would help to avoid the capture of commercial technologies, and we request the opportunity to discuss specific concerns prior to the publication of a final rule. We also urge the State Department to publish a final "specially designed" definition as soon as possible. Category XI, like many other categories, contains extensive use of the phrase "specially designed." Thorough industry recommendations are dependent on a full understanding of the definition and potential scope of "specially designed." While the proposed revision to Category XI represents significant progress towards creating a positive list, there are several instances in which the inclusion of "specially designed" in the control parameters will create vague catch-all descriptions that run counter to the inherent objectives of creating a positive list.

The NAM understands that specific parameters may not be possible for all items in Category XI. In those instances, we encourage the State Department to consider the concept of "specifically designed for military application" to avoid the inadvertent capture of commercial systems. This distinction would reduce confusion and questions relating to systems currently in use in the civil sector, like traffic collision avoidance systems and the commercial wireless security sector.

The NAM also strongly encourages the Department to give due consideration to the broad foreign availability of military electronics – as well as to the controls of multilateral regimes like the Wassenaar Arrangement – and carefully define U.S. control parameters to capture only those technologies that provide a military or intelligence advantage to the United States. The Administration has previously stated that, generally, only items exclusively available from the United States would meet the new criteria for maintaining ITAR control. To apply stringent unilateral controls in the United States would encourage the designing-out of U.S. electronic parts and components and continue the troubling trend of "ITAR-free" rhetoric by global customers and suppliers.

We also urge the Department to clarify that previously issued Commodity Jurisdiction determinations (CJs) that identified an item as commercial and subject to CCL jurisdiction will not have to be re-submitted to ensure that they are still under the CCL.

Product-Specific Comments

Regarding radars, we recommend an additional guidance note be published applicable to Category XI(a)(3) radars to clarify that identified technical parameters are designed-capability thresholds. Advertised system performance is set within defined conditions, so a system may perform at higher or better limits when the environmental conditions are altered. Further definition or clarifying notes will assure the standards are being applied consistently when evaluating the technical parameters for specific radar systems within Category XI(a)(3). We also note that allowing an exporter to identified the radar as broadly controlled by XI(a)(3), without having to identify the radar to the lowest sub-category level, would be more efficient and provide comparable security.

While the notes to proposed Category XI(a)(7) for developmental electronics are helpful, the NAM encourages the State Department to consider additional language to proposed Category XI(a)(7) to clarify the control of developmental electronic devices, systems, or equipment for a military application. As written, the only criteria for ITAR control are that an item be an electronic device, that it be developmental, and that it be funded by the Defense Department. There seems to be no requirement that the item be enumerated or described elsewhere in Category XI. Such an approach could result in an item being treated as a defense article during its development when it is not enumerated or captured elsewhere on the USML. If an item is not enumerated and the Department would like to capture it for ITAR control, we recommend utilizing USML Category XXI for that specific purpose. Establishing jurisdiction based on the funding source could result in inconsistencies and confusion for both manufacturers and government. We strongly recommend this entry be deleted or substantially modified.

We further recommend a separate sub-paragraph be identified for software and software source code for the development, operation, test and repair of articles enumerated in Category XI. While the sub-paragraph would ideally be added to each USML Category to align more closely with the Commerce Control List (CCL), this is particularly critical given the use of software in electronics, as there may be ongoing or periodic transfers of software over the product life cycle.

Regarding Printed Circuit Boards (PCBs) and patterned multichip modules found in the revised Category XI(c)(2), the NAM recommends the Department separate designation of PCB's and

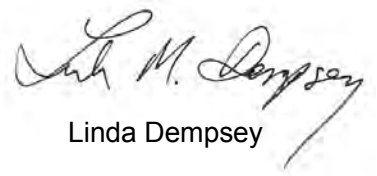
patterned multichip modules to account for differences between the two. In both cases, only those PCB's and patterned multi-chip modules that are peculiarly responsible for the controlled characteristics of a defense article should be subject to Category XI controls. The term multi-chip modules in particular should be defined narrowly to avoid coverage of integrated circuits, which are increasingly produced in multi-chip packages. We also recommend providing definitions for the two designations. The term "patterned multichip modules" is overly broad given the wide array of multichip products, especially in the commercial domain. We suggest the Department consider discarding this idiom in favor of a narrower, more specifically defined term to avoid excessive and unintended coverage. We encourage the Department to ensure the final rule reflects the concept that in most cases, the treatment of the PCB/patterned multichip module should follow the commodity jurisdiction of the article that it is specially designed for – as opposed to the commodity jurisdiction of the overall system into which it is incorporated. Further, language in Category XI should reflect the concept that there are cases where the PCB does not itself reveal ITAR-controlled technical data but is specially designed for an ITAR-controlled defense article. To account for such cases, companies should be allowed to either self-classify jurisdiction of the PCB/PCB design based on the presence (or absence) of ITAR-controlled technical data or to submit a CJ for such a determination.

Additionally, the proposed rule seems unclear about whether a part/component will be controlled under USML Category XI(c) simply because it is described in XI(c), or if the control of such a part/component under Category XI(c) is conditional upon it being used in or specially designed for items described in and controlled in Category XI(a). The NAM recommends the connection between XI(c) and XI(a) be clarified in the final rule, including any other assumptions that the exporter or end-user must consider in order to properly determine whether or not the electronic part/component is controlled under XI(c).

Finally, manufacturers find Category XI to be closely related to USML Categories VIII (aircraft and associated equipment), XII (fire control, range finder, optical and guidance and control equipment) and XIX (gas turbine engines). We urge the U.S. government to recognize the importance of finalizing related categories in timely manner. As these other categories are completed and published in final form, the licensing jurisdiction for affiliated electronics may be uncertain. To avoid unnecessary confusion, the Departments of State and Commerce should seek to minimize the delay between the publication of Category XI and these related categories in final form.

The NAM appreciates this opportunity to provide comments on the proposed rule for USML Category XI. We look forward to continuing to work with the State Department and its partners on this important initiative.

Thank you,



Linda Dempsey

LMD/la

AEROSPACE INDUSTRIES ASSOCIATION

January 28, 2013

U.S. 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: Ms. Candace M. J. Goforth, Director, Office of Defense Trade Controls Policy, Department of State

RE: Notice of Proposed Rulemaking, ITAR Amendment – Category XI and 'Equipment'

Dear Ms. Goforth:

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 XI (Military Electronics) of the U.S. Munitions List (USML) to describe more precisely which military electronics and related defense articles warrant control on the USML will create a "positive" list that will result in a more predictable, efficient, and transparent export control system. AIA has long been a champion of export control reform, and we are encouraged the Administration shares this priority. To further progress on sensible export controls, AIA would like to highlight the below issues for further consideration.

Overlap of USML Categories:

Category XI is closely related to Categories VIII (aircraft and associated equipment), 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, the U.S. Government should recognize the importance of finalizing related categories in timely manner. As these other categories are completed and published in final form, the licensing jurisdiction for affiliated electronics may be vague. To avoid unnecessary confusion, the Departments as of State and Commerce should seek to minimize the delay between the publication of Category XI and these related categories in final form.

Specially Designed Language:

Category XI, like many other categories, contains extensive use of the phrase "specially designed." Final industry recommendations and comments are dependent on the full understanding of "specially designed," which was published in draft form on June 19, 2012 (See AIA public comments submitted on August 3, 2012). While the proposed revision to USML Category XI represents significant progress towards creating a positive list, there are several instances in which

the inclusion of "specially designed" in the control parameters will create vague "catch all" commodity descriptions that run counter to the objective of creating an enumerated list of the most-sensitive commodities that warrant the stringent controls of the International Traffic in Arms Regulations (ITAR). Including specific parameters may not be possible for all items in Category XI. However, where possible, parameters should be included, for example in XI(a)(1)(v) "low frequency/very low frequency "; XI(a)(1)(vi) "cooperative sensing"; or AESA radars in XI(a)(3)(xii).

In those instances where inclusion of specific parameters is not possible, AIA recommends integrating the concept of "specifically designed for articles controlled in this subchapter" to avoid the inadvertent capture of commercial systems – this will reduce confusion and questions relating to systems currently in use in the civil sector. For example, C3, C4, and C4ISR systems (XI(a)(5)(i)) "specially designed" to integrate, incorporate, network, or employ defense articles may unintentionally capture command and control systems built using predominantly commercial components; autonomous processing/control systems and equipment that enable cooperative sensing (XI(a)(1)(vi)) is likely to capture commercial Autonomous Underwater Vehicles (AUVs) that use non-military cooperative sensing; and XI(a)(3)(xii) will likely capture commercial AESA radars using electronic steering.

Foreign Availability:

Additionally, we believe the Administration should recognize the foreign availability of electronics when creating the bright line between USML and CCL. Many proposed control parameters are already achieved by products available from various international providers. Items available internationally offer no critical military or intelligence advantage to the United States. Further, as such items are not exclusively available from the United States they do not meet the new criteria the Administration has articulated for maintaining control under the ITAR. If U.S. partner and ally countries make equivalent systems, parts, or components commercially available, and not subject to 'munitions list' level control,, the U.S. should apply a comparable level of control. To do so otherwise would encourage the designing-out (ITAR-free) of U.S. electronic parts and components.

Developmental Program language:

Establishing jurisdiction based on the funding source is likely to result in control inconsistencies. The Administration should consider amending the language regarding developmental programs (XI(a)(7)) to ensure that a Department of Defense contracting officer is not making final decisions as to whether something is ITAR controlled.

Additionally, while the notes to proposed USML Category XI(a)(7) for developmental electronics are helpful, AIA recommends additional language to proposed Category XI(a)(7) "Developmental electronic devices, systems, or equipment for a military application, funded by the Department of Defense and inventions/innovations not disclosed to the U.S. Government."

Commodity Jurisdictions:

Industry would like assurance from the Department of State that prior Commodity Jurisdictions (CJs), which identified an item as commercial, and subject to CCL jurisdiction, would not have to be re-submitted to ensure that they are still under the CCL.

Civil/Commercial Products:

Particular attention should be given to avoid capturing civil technologies related to traffic collision avoidance systems, phased arrayed satellite communications antennas, automatic direction finder antennas, air surveillance radars and the commercial wireless security sector.

Printed Circuit Boards:

AIA members recommend the following regarding Printed Circuit Boards and patterned multichip modules found in the revised Category XI:

1. Separate designation of PCB's and patterned multichip modules to account for differences between the two, and provide definitions of the two.
2. Ensure the language reflects the concept that in most cases, the treatment of the PCB/patterned multichip module should follow the commodity jurisdiction of the article that it is designed for (as opposed to the commodity jurisdiction of the overall system into which it is incorporated).
3. Further, language in Category XI should reflect the concept that there are cases where the PCB (or design of the PCB) does not itself reveal ITAR-controlled technical data even though it is designed for an ITAR controlled defense article. To account for such cases, companies must be allowed to self-classify jurisdiction of the PCB/PCB design based on the presence/absence of ITAR controlled technical data, or submit a CJ to get such a determination.

Parts/Components:

The revisions are not clear as to whether a part/component will be controlled under USML Category XI(c) simply because it is described in XI(c), or if the control of such a part/component under Category XI(c) is conditional upon it being used in or specially designed for items described in and controlled in XI(a). Given the doubt in jurisdiction this creates, the connection between XI(c) and XI(a) should be clarified in the final rule, including any other assumption(s) that the exporter or end-user must consider in order to properly determine whether or not the electronic part/component is controlled under XI(c).

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.

Best regards,

Remy Nathan

Remy Nathan
Vice President, International Affairs
Aerospace Industries Association

Comments from United Technologies Corporation ("UTC") concerning the November 28, 2012 proposed "Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for Equipment."

Definition of 'Equipment.'

The proposed rule includes a definition of 'equipment', as follows:
§ 121.8 (h) Equipment is a combination of parts, components, accessories, attachments, firmware, or software that operate together to perform a specialized function of an end-item or a system.

Hierarchy.

'Equipment' is specifically differentiated from 'system' (§ 121.8 (g)), as it has its own entry. 'Accessories' and 'attachments' are a type of 'equipment' (see § 121.8 (c)). There is the implication that 'equipment' is a subset of an 'end-item' or 'system', as the definition states that the equipment performs *a* specialized function of an 'end item' or 'system.' It would also seem reasonable that 'equipment' can also be a type of 'end item' or 'system,' as 'equipment' can perform its intended function with just a power source (e.g. test equipment, a winch, etc.)

It is likely that within Industry there will be difficulty differentiating between 'equipment', 'end items', and 'systems,' and based on the definitions, they may just be different aspects to the same item. If the intent is for there to be a clear differentiation between 'equipment', 'end items', and 'systems', it would be helpful to provide clear guidance as to the relationship (hierarchy) between these three items. If the intent is for 'equipment', 'end items', and 'systems' to be different aspects of the same item, that should be clarified.

At a minimum, § 121.8 (g) ('system') should be amended to add 'equipment' as one of the elements.

Potential unintended de-control of 'systems.'

There are several entries that control 'equipment, as follows:', but the sub-entries list 'systems and equipment.' Two examples from the proposed rule:

(a) Electronic equipment not included in Category XI of the U.S. Munitions list, as follows:
(1) Underwater hardware, equipment, or systems, as follows:

It is not clear that underwater 'systems' would be controlled in Category XI(a)(1) using this wording, as 'systems' are not called out in XI(a).

(c) Parts, components, accessories, attachments, and associated equipment, as follows:

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

(i) Is classified;

(ii) Contains classified software; or …..

It is not clear that a classified 'system' would be controlled. Unless there is an established equivalence between equipment and systems (see Comment 1), UTC recommends that the items in an entry (e.g., 'equipment or systems') be identically reflected in the sub-entry.

Inconsistent construction

The entries use both 'systems and equipment' and 'systems or equipment.' While both usages are equivalent in this situation, it would be reasonable to standardize on one usage so as not to imply a difference was intended. Because of the definition of "use" in the Export Administration Regulations, Industry is sensitized to 'and' and 'or'.

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

January 28, 2012

PM/DTC: 0612-1054

DDTC Response Team
DDTCResponseTeam@state.gov

Subject: "ITAR Amendment – Category XI and Equipment"

DDTC Response Team:

Honeywell hereby provides the following comments relating to the subject proposed rule issued in the Federal Register notice dated November 28, 2012 – RIN 1400-AD25.

Honeywell believes that the language in the proposed rule specifically relating to Category XI(a)(3)(i) "Airborne radar that track targets" could have unintended consequences, since the term "track targets" is not clearly defined.

Honeywell believes that the proposed language will place both current civil radar systems and future civil radar systems with the functional capability of tracking targets for increased safety under the jurisdiction of the Department of State.

Honeywell currently produces weather radar systems that can detect other aircraft and ensure that they are not shown on the weather display. Adding a tracking capability would improve the reliability of that process. Honeywell is also considering implementing a storm tracking capability to improve pilots' route planning. The purpose of storm tracking is to estimate the horizontal motion of the storms. A storm detected at long range may not appear to be a factor in safe routing through an area affected by weather. But that storm may be moving such that when the aircraft passes through the area, the storm blocks the planned route. If the velocity of the storm is estimated at long range, any conflict with the planned route can be identified early.

Additionally, Honeywell is in the process of developing a radar system for civil helicopters that will be used to detect objects on the ground such as offshore oil platforms. The tracking capability would be used to reduce false target indications and improve the position estimate of the destination platform. Another potential function that has been considered is using radar on civil aircraft in an enhanced aircraft traffic surveillance system to improve safety and airspace utilization. This would augment the existing Traffic Collision Avoidance Systems or TCAS, which currently incorporates aircraft target tracking by interrogating aircraft (civil or military) equipped with transponders.

* * * * *

Sincerely,

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

Aeroflex Inc.
Agilent Technologies Inc.
Anritsu Company
National Instruments Inc.
Tektronix Inc.

January 28, 2013

Sent via email to: DDTCResponseTeam@state.gov

Directorate of Defense Trade Controls
Office of Defense Trade Controls Policy
ATTN: Regulatory Change, USML Category XI and "Equipment"
U.S. Department of State
Washington, DC 20522-0112

RE: **RIN 1400-AD25** (Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI and Definition for "Equipment")

Dear Sir or Madam:

The undersigned electronic test and measurement companies, Aeroflex Inc., Agilent Technologies Inc., Anritsu Company, National Instruments Inc., and Tektronix Inc., which represent the vast majority of domestic production capability for signal analyzers, are pleased to have the opportunity to respond to this proposed rule, Amendment to the International Traffic in Arms Regulations: Revision of U.S. Munitions List Category XI (military electronics) and Definition for "Equipment." The undersigned companies commend the President's Export Control Reform initiative, and support efforts to more accurately describe the articles within Category XI, to establish a ''bright line'' between the USML and the CCL for the control of these articles.

These comments are limited to the proposed control for USML Cat XI(b) generally and entry XI(b)(4) in particular, as follows:

> (XI)(b) Electronic systems or equipment "specially designed" for the collection, surveillance, monitoring, or exploitation of the electromagnetic spectrum (regardless of transmission medium), for intelligence or security purposes or for counteracting such activities. This includes:
>
> (XI)(b)(4) Technical surveillance countermeasure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum that:
> (i) Sweep or scan speed exceeding 250 MHz per second;
> (ii) Have instantaneous bandwidth exceeding 110 MHz;
> (iii) Have built-in signal analysis capability;
> (iv) Have a volume of less than 1 cubic foot;
> (v) Record time-domain or frequency domain digital signals other than single trace spectral snapshots; and
> (vi) Display time-vs-frequency domain (*e.g.*, waterfall or rising raster).

To begin, we note that as proposed, Category XI(b) continues to be a catch-all, and we observe that this is contrary to the Export Control Reform goal of objective clarity and "bright-line" separation of the USML from the CCL. Indeed, the Department of Commerce (in 77 FR 70945) noted that maintaining XI(b) as a catch-all could cause confusion regarding the jurisdictional of equipment such as that described by ECCN 5A980 ("devices primarily useful for the surreptitious interception of wire, oral, or electronic communications"). To improve the clarity of a revised XI(b), we suggest that DDTC could provide definitions for the broad terms "intelligence" and "security".

Specifically with regard to the proposed XI(b)(4), while acknowledging the relevance of controlling certain TSCM equipment on the USML, we are concerned that this proposed language fails to establish a "bright line" between the USML and the CCL, and will result in nearly all signal analyzers being subject to the ITAR, and may fail to adequately control the technology that DDTC wished to control. Our reasoning is as follows:

1. ***Fails to establish a bright line between the USML and the CCL; is not a "positive list."***

We believe that this proposed XI(b)(4) fails to achieve the stated goals to "describe more precisely the articles warranting control on the USML" and to establish a "bright line" between the USML and the CCL. The key reason for this is the proposed sub-entry XI(b)(4)(iii), because "signal analysis capability" is inherent in all spectrum analyzers, and this proposed regulation provides neither a definition for nor insight into what "signal analysis capability" DDTC seeks to control. XI(b)(4) is all-encompassing and is not a positive list. *We believe that entry is not intended to capture parameter measurement for standard communications signals and subcarriers, such as 'modulation depth', 'modulation error ratio'; 'error vector magnitude' 'I/Q imbalance', 'signal-to-noise ratio', 'carrier frequency error', 'Eb/No', 'BER', 'Eye Diagram', 'Phase Noise', and the like.* However, listing these (and probably other) measurements would create a negative list that would require continual update. We respectfully suggest that it is DDTC's role to clearly enumerate the types of signal analysis of concern in a positive list.[1]

As a vivid illustration of the inadequacy of the phrase "built-in signal analysis capability", please note that in 2011 and 2012 Tektronix submitted CJs on 19 different models of signal analyzers. Although all 19 of these instruments have "built-in signal analysis capability", only three of them were determined to be subject to the ITAR.

2. ***Will cause numerous Commodity Jurisdiction requests to be submitted.***

The practical implication of XI(4)(b)(iii) is that manufacturers of signal/spectrum analyzers will be forced to submit Commodity Jurisdiction requests for nearly all instruments; we respectfully suggest that this outcome is neither rational nor practical. We also note that such outcome would have a significant adverse effect on competition: publication of multiple CJs would tend to reveal internal developments that most companies would consider proprietary.

[1] In creating the positive list, DDTC may wish reference the following Tektronix CJs: 911-11, 335-12, 336-12, 337-12, 338-12, 742-12, 849-12, 854-12, 856-12, and 857-12.

That many CJs would be submitted is not merely a theoretical possibility: As previously mentioned, Tektronix has already submitted CJs on 19 different signal analyzer models. But even this relatively large number does not guarantee clarity regarding all types of signal analysis capability that might be of concern to DDTC. Further, these CJs are not applicable to and might not be understood by other manufacturers.

3. ***Does not adequately control the underlying technology of concern.***

The proposed XI(b)(4) poses significant concerns with regard to technology control. The proposed technical parameters enumerated in the several subparagraphs are all pertinent to dual-use signal/spectrum analyzers that are controlled by the EAR. Does DDTC intend that what has been bona-fide dual-use technology will now become subject to the ITAR? Would the technologies taken individually remain subject to the EAR but taken in combination be subject to the ITAR? If so, can DDTC suggest how that would be accomplished? Could a signal analysis algorithm of concern be controlled by the ITAR if intended for use in an instrument having small volume but controlled by the EAR if intended for use in an instrument having large volume? Without enumeration of the signal analysis capabilities of special concern to DDTC, the probable outcome is that manufacturers would treat the technology as subject to the EAR.

4. ***Proposed volume threshold of one cubic foot will capture some rack-mount instruments***.

We believe that the intent of XI(b)(4)(iv), "volume of less than 1 cubic foot" is to differentiate portable/handheld from rack-mount instruments and to limit control to bona fide portable handheld instruments. If so, then the one cubic foot threshold is problematic because many rack-mount instruments have volume slightly less than that. For example, the Agilent MXA Signal Analyzer (N9020A), which is a standard rack-mount instrument weighing 35 lbs, would be captured because it is 0.987 cubic feet (7.0" x 16.8" x 14.5") and has all of the other parameters listed in the proposed XI(b)(4). If the intent is to control only those instruments that are bona fide "handheld/portable", then 0.5 cubic feet would be a better threshold. Alternately, a combination of size and weight (perhaps less than 25 lbs), or size and "battery-powered", or size and weight and "battery-powered" would be effective differentiators. With regard to size, it may be useful to note that a standard 5-gallon plastic bucket (e.g., paint bucket) is 11.75" diameter x 14.5" height = 0.91 cubic feet. We suggest that a 5-gallon bucket is much larger than what is commonly understood to be "handheld/portable".

5. ***Grammar is unclear.***

From a purely grammatical perspective, export control language that combines multiple sub-paragraphs with the conjunctive "and" customarily emphasizes this with the phrase "having all of the following". In the spirit of improved regulatory clarity, we urge that this phrase be added.

6. ***The proposed control parameters are incomplete.***

In paragraph XI(b)(4)(i), sweep speed is affected by resolution bandwidth, such that faster sweep speeds can more easily be achieved at wider resolution bandwidth. For the time-domain/frequency-domain recording capability in paragraph XI(b)(4)(v), recording time duration

is affected by bandwidth, such that longer duration can more easily be achieved at smaller bandwidths. For both of these, we propose that bandwidth be added as a control parameter.

7. ***The proposed control parameters should be joined by a combination of 'AND' and 'OR'.***

The proposed regulation shows that all of sub-paragraphs (i) through (vi) would be joined by the conjunctive "and", but we believe that is technically incorrect because it describes a combination of functions/features some of which are alternate methods of achieving the same measurement result. In particular, subparagraphs (i) and (ii) (sweep speed and instantaneous bandwidth, respectively) should be combined by OR because these are alternate mechanisms for achieving bandwidth coverage. Additionally, subparagraphs (v) and (vi) (recording and displaying, respectively) should be combined by OR because they are alternate mechanisms of data output. These sub-combinations and the other parameters should be combined by AND.

In the spirit of progress, we offer the following alternate language/structure for XI(b)(4):

Proposal: **XI(b)(4)** Technical surveillance counter-measure (TSCM) or electronic surveillance equipment and counter electronic surveillance equipment (including spectrum analyzers) for the RF/microwave spectrum ~~that~~ **having all of the following**:

(i) having any of the following:

a. sweep or scan speed exceeding 250 MHz per second ***for resolution bandwidths less than [x] kHz]***; **or**

b. ~~(ii)~~ have instantaneous bandwidth exceeding 110 MHz~~;~~

(ii) ~~(iii)~~ ~~have~~ built-in signal analysis capability **for <insert positive list here>**[2];

(iii) ~~(iv)~~ volume of less than ~~1~~ **0.5** cubic foot **[and battery-power] [and weight less than 25 lbs]; and**

(iv) having any of the following:

(iv)(a) ~~(v)~~ ~~record~~ time-domain or frequency-domain **recording of** digital signals other than single trace spectral snapshots ***with continuous gap-free recording time exceeding [250] ms at bandwidth exceeding [x] MHz*****; or** ~~and~~

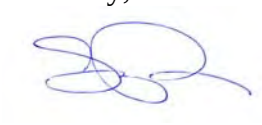
(iv)(b) ~~(vi)~~ ~~display~~ time-vs-frequency domain **display** (*e.g.*, waterfall or rising raster) ***with continuous spectrum updates to the raster exceeding [250] per second, regardless of the rate at which the raster is then sent to the display;***

[2] Again, in creating a positive list, DDTC may wish reference the following Tektronix CJs: 911-11, 335-12, 336-12, 337-12, 338-12, 742-12, 849-12, 854-12, 856-12, and 857-12.

In summary, we believe that the proposed Category XI(b)(4) fails to differentiate between those spectrum analyzers that are useful for TSCM activities and those that are not. As written, it would cause confusion, not clarity; it would unnecessarily and inappropriately capture many spectrum analyzers on the USML; and it would result in significant and ongoing CJ activity as manufacturers attempt to comply with it. Additionally, if signal analyzers were captured by the ITAR, it would have a significant adverse impact on the competitive position of US signal analyzer manufacturers relative to our foreign competitors. Finally, we also believe that our suggested modifications would result in a control that accomplishes what DDTC seeks to achieve and we urge DDTC to consider them seriously.

Thank you once again for the opportunity to provide comments on this proposed rule. We would be pleased to discuss any of this with DDTC.

Sincerely,



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AMERICAN ASSOCIATION OF EXPORTERS AND IMPORTERS

The Voice of the International Trade Community Since 1921

January 28, 2013

Via E-Mail: publiccomments@bis.doc.gov DDTCResponseTeam@state.gov

Regulatory Policy Division
Bureau of Industry and Security
U.S. Department of Commerce
Room 2099B
Washington, DC 20230

Office of Defense Trade Controls Policy
U.S. Department of State
2401 E Street NW, SA-1
Room H1200
Washington, DC 20522

Re: Comments on BIS Proposed Rule on Revisions to the EAR; Control of Military Electronic Equipment and Related Items the President Determines No Longer Warrant Control under the United States Munitions List (USML); and DDTC Proposed Rule on Amendment to the ITAR: Revision of USML Category XI
BIS Docket No.: 120330233-2160-01
BIS RIN: 0694-AF64
DDTC RIN: 1400—AD25

Dear Sir or Madame:

On behalf of the American Association of Exporters and Importers (AAEI), we respectfully submit these comments to the Bureau of Industry and Security (BIS) and the State Department's Directorate of Defense Trade Controls (DDTC) concerning the proposed rule on Revisions to the EAR on Control of Military Electronic Equipment (Category XI) and Related Items which the President determines no longer warrants control under the United States Munitions List (USML) published in the *Federal Register* on November 28, 2012 (77 Fed. Reg. 70945 and 70958, respectively).

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. Many of these enterprises are small businesses seeking to export to foreign markets. 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. Overview

AAEI appreciates the opportunity to comment on the Revisions to the EAR on Control of Military Electronic Equipment and Related Items under the President's Export Control Reform Initiative. AAEI strongly supports the President's export control

reform effort. AAEI has participated in consultations with Administration and Congressional staffs regarding recommendations for export control reform of the current statutory and regulatory regime.

We appreciate the enormity of undertaking the task of modernizing the U.S. export control system which has developed over 50 years and reforming it in three years.

We strongly support the BIS' and DDTC's efforts to revise the EAR with respect to military electronic equipment and are pleased to offer the following comments on the proposed changes.

2. Comments on BIS and DDTC Proposed Rules

a. General Comments

Overall, the proposed changes satisfy the general goal of Export Control Reform (ECR) by creating more positive lists. For example, the new USML Category XI will be more closely aligned with the EAR in that item descriptions generally become more technical and more specific rather than including broad, catch-all categories. While this is useful to resolve uncertainties companies will need to ensure that the appropriate technical expertise is involved in the classification and jurisdiction process.

b. De Minimis Rules

Many electronic parts and components have very low values and are several tiers removed from the end item. Industry has noted that the current USML controls impose a heavy burden on manufacturers and exporters of low-value parts for incorporation into much larger end-items. U.S. manufacturers and exporters are currently struggling with an onerous administrative burden for low-value parts, which makes dealing in smaller items cost prohibitive in some instances. The proposed rule will subject many of these items to the EAR's *de minimis* rules, which we expect will significantly reduce the administrative burden on U.S. companies dealing in low-value parts and components. We believe this change will have a positive impact on U.S. manufacturers and may encourage U.S. companies to continue to deal in such product lines and will encourage non-U.S. companies to purchase items that they would not agree to do so due to the restrictive nature of the International Traffic in Arms Regulations' (ITAR) "see through" rule and the growing preference outside of the U.S. for "ITAR free" products.

c. License Exceptions

AAEI and its members appreciate that moving certain items from USML Category XI items to the CCL will broaden the eligibility of many electronics parts and components for license exceptions, most notably Strategic Trade Authorization (STA). This change will provide a significant benefit to U.S. exporters and to the electronics industry. However, it will be very important for exporters and their customers to understand the expanded opportunities available due to these license exceptions, as well as the procedures for claiming these exceptions. At this time, it is not evident that industry is sufficiently comfortable with license exception STA to use

it to its full benefit. Therefore, outreach by BIS and other organizations in the U.S. and abroad will be particularly important with respect to the use of license exception STA for items formerly captured by USML Category XI and other USML categories.

d. Streamlining and Simplification of ECCN 3A611

The proposed changes to the EAR leads an ECCN 3A611 that is longer and more complex than many current CCL entries. We recognize that creating a more positive list entails lengthening the list to include sufficient detail on each item. However, the complexity of the new ECCNs will likely pose challenges to companies and their employees. To the extent that the proposed list can be simplified, we would encourage that, which also includes shortening the list of items covered in 3A611.y.

Proposed paragraph ECCN 3A611.a would control electronic "equipment," "end items," and "systems" "specially designed" for military use that are not enumerated in either a USML category or another "600 series" ECCN. Similarly, proposed USML Category XI(a)(7) would control "Developmental electronic devices, systems, or equipment funded by the Department of Defense." We continue to encourage the agencies to phase out these "catch-all" categories in favor of more positive, defined categories.

ECR aims to align the jurisdictional status of technology and software with the items to which they relate. However, proposed note 1 to ECCN 3A611.x provides that this entry "includes parts, components, accessories, and attachments 'specifically designed' for military use that are neither enumerated in any USML category nor controlled in another '600 series' ECCN." We believe that the .x concept in all of the new 600 series entries is confusing and will frustrate users attempting to determine the correct classification of their parts.

One way that this could be addressed is to insert the phrase "by themselves" in the list of related controls, as follows:

> List of Items Controlled
> Unit: End items in number; parts,
> component, accessories and attachments in
> $ value
> Related Controls: (1) Electronic items that are
> BY THEMSELVES enumerated in USML Category XI or other
> USML categories, and technical data
> (including software) directly related
> thereto, are subject to the ITAR. (2)
> Electronic items ''specially designed'' for
> military use that are not BY THEMSELVES controlled in any
> USML category but are within the scope of
> another ''600 series'' ECCN are controlled
> by that ''600 series'' ECCN. Thus, . . .

e. Jurisdictional Interpretations

According to AAEI industry representatives whose products serve both civilian and military applications, the proposed changes should help preclude overly broad interpretations of "specifically designed" resulting in across-the-board findings of ITAR jurisdiction.

One example is in the radio frequency (RF) arena, where components predominately have civilian uses with a secondary military application (e.g., first responder radios). Even though the design may be unique to the military, the technology is readily available around the world. Thus, the approach BIS has outlined appropriately addresses when an article should be controlled:

> The review was focused on identifying the types of articles that are now controlled by USML Category XI that are either (i) inherently military and otherwise warrant control on the USML or (ii) if it is of a type common to nonmilitary electronic equipment applications, possess parameters or characteristics that provide a critical military or intelligence advantage to the United States, and that are almost exclusively available from the United States.

Companies will seldom encounter a situation where "almost exclusively available from the U.S." will apply. Thus, the new CCL category helps focus jurisdictional determinations.

The "inherent" capabilities of passive electronic components are also a key issue. Passive electronic components are usually readily available on the commercial market, typically made in China, and predominately do not provide a military advantage to overseas countries. Nonetheless, many are currently found to be subject to ITAR jurisdiction and the new ECCN should help address this issue.

3. Comment on DDTC Proposed Rule

We have the following comments on specific provisions in the proposed version of USML Category XI:

Category XI(c)(2) — The proposed rule would provide that "printed circuit boards or patterned multichip modules for which the layout is ''specially designed'' for defense articles in this subchapter" remain on the USML.

While we are aware that there has been a great deal of interest on printed circuit boards (PCBs), we believe that keeping PCBs that have been specially designed for defense articles on the USML is inconsistent with the basic tenets of ECR and is likely to capture a wide range of items that neither DDTC nor BIS intended to capture. A PCB in many respects is no different that many of the parts and components that have been proposed to be moved to the CCL. A PCB in itself does not have any inherent military capability, even if it was designed for a military application. In addition, it is possible that a PCB originally designed for a military application could become a predominantly commercial off the shelf item in the future. Therefore, it appears reasonable to treat PCBs in the same way as the electronic parts and components that contain them and move all PCBs to the CCL where they will remain subject to the export controls administered by BIS.

Category XI(c)(13) — The proposed rule would cover the following tuners:

> *Tuners having an instantaneous bandwidth of 30 MHz or greater and a tuning speed of 300 microseconds or less to within 10 KHz of desired frequency.*

This proposed entry contains a number of problems. First, with respect to the structure of the entry, language that combines multiple export control criteria with the conjunctive "and" customarily emphasizes this with the phrase "having all of the following." Thus, we urge DDTC to revise this control proposed rule to include "having all of the following." A similar review should be conducted with respect to other similar entries.

Second, this proposed entry introduces the following new undefined terms: "tuners," "instantaneous bandwidth," and "tuning speed." We urge DDTC to provide definitions of each of these terms and, to the extent possible, reuse terms and definitions that exist in the Export Administration Regulations. Clarifying this language will reduce the number of Commodity Jurisdiction determinations submitted by industry.

The third point relates to the phrase: "an instantaneous bandwidth of 30 MHz or greater" While the term "tuners" is not defined, an informed reader can speculate that "tuners" intended to be covered in Category XI(c)(13) are those components of "Technical surveillance counter-measure" equipment described in Category XI(b)(4). If so, we request a harmonization of the instantaneous bandwidth parameters and a statement indicating that these tuners are "specially designed" components of equipment described in Category XI(b)(4). If not, we request DDTC to provide more information on the type of tuner component intended to be controlled in USML Category XI(c)(13).

Fourth, the proposed rule requires a tuning speed of 300 microseconds or less to within 10 KHz of desired frequency. We request DDTC change this parameter to a percentage model similar to that found in the "frequency switching time" definition contained in Part 772 of the EAR to make actual frequency measurements possible and reasonable, thus removing ambiguity or leaving room for interpretation.

Finally, the proposed entry does not provide an operating frequency range nor a tuning time based on frequency step size. The absence of these criteria broadens the scope of items controlled in Category XI(c)(13). We request DDTC to add these parameters to clarify the type of tuner component intended to be controlled in Category XI(c)(13).

3. Conclusion

AAEI and its member companies greatly appreciate all the work and effort being made by the U.S. Government to achieve this goal. AAEI would be pleased to discuss these comments in more detail with BIS and DDTC leadership and staff.

Respectfully submitted,

Marianne Rowden
President & CEO

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

January 27, 2013

Office of Defense Trade Controls Policy
U.S. Department of State

RE: RIN 1400-AD25 (ITAR Amendment – Category XI and "Equipment")

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-six accredited institutions of higher learning in the United States. AUECO members monitor proposed changes in laws and regulations affecting academic activities and advocate for policies and procedures that advance effective university compliance with applicable U.S. export controls and trade sanction regulations.

AUECO is specifically interested in contributing to the export reform effort in order to ensure that the resulting regulations do not have an adverse impact on academic pursuits. As a result, AUECO is providing the following comments in response to the U.S. Department of State's (Department) request for public comments on its proposed revision of U.S. Munitions List (USML) Category XI Military Electronics and definition for "Equipment."

While AUECO appreciates the current effort, we feel that parts of the proposed rule fail to achieve these objectives and result in either increased ambiguity or leave the academic export community without guidance. Our comments are organized as follows:

- Jurisdictional Clarity – Failure to Create a "Bright Line";
- Unambiguous Descriptions – Absence of Performance Parameters;
- Fundamental Research Concerns – Commodity Jurisdiction Cycles, Proof-of Concept Activity and Other University Specific Issues;
- An Imprecise Definition of "Equipment"; and
- The Need for Harmonized Definitions.

<u>Jurisdictional Clarity – Failure to Create a "Bright Line"</u>

The development of positive lists with objective parameters to describe controlled items is important for the export community. "Bright lines" between items and technologies controlled by the International Traffic in Arms Regulations (ITAR) and by the Export Administration Regulations (EAR) will improve our ability to comply with the regulations.

The establishment of a "bright line" between the USML and the Commerce Control List[1] (CCL) was an initial objective[2] of the export control reform initiative and is clearly reaffirmed in the current notice. AUECO has reviewed the proposed revisions to Category XI and identified several instances where the intended bright line between items on the USML and CCL is in fact blurred and appears to be an expansion of regulatory scope.

AUECO has identified Export Control Classification Numbers (ECCNs) have been provided for each some areas of potential overlap. However due to limited resources and time constraints we are not confident that we have identified all such occurrences; therefore, the following should only be considered as illustrative examples. Unfortunately, a comprehensive review to identify all possible areas of overlap was not possible given our limited time and resources.

Category XI(a) Electronic equipment not included in Category XII of the U.S. Munitions List, as follows

Category XI(a)(1)(ii) appears to include commodities currently controlled on the CCL in ECCN 6A001.a.2.a-c (hydrophones, hydrophone arrays, and related processing equipment) which are used by biologists and commercial vessels to locate and identify marine mammals, among other non-military uses. Software related to ECCN 6A001 commodities is located in ECCN 6D003. Proposed Category XI(a)(1)(ii) also appears to overlap with the commodities currently described in ECCN 6A991 Marine or terrestrial acoustic equipment, n.e.s., capable of detecting or locating underwater objects or features or positioning surface vessels or underwater vehicles; and specially designed components, n.e.s.

Category XI(a)(1)(iii) is a general description devoid of technical parameters that might be used to determine what articles are intended to be controlled; however, the note to the paragraph excludes commodities described in ECCN 5A001.b.1 which does include technical parameters. Unfortunately when taken together the proposed text of Category XI(a)(1)(iii), the clarifying note, and the inclusion criteria for ECCN 5A001.b.1 can create an interpretation that items falling outside the described technical parameters of ECCN 5A001.b.1 are controlled under the ITAR, even if they might previously have been treated as EAR99 (i.e. failed to meet the technical specifications in ECCN 5A001.b.1). We suggest that DDTC clarify how the note to XI(a)(1)(iii) is to be used by exporters in determining what is subject to the control on the USML to avoid the inclusion of items that are currently EAR99.

The controls on radar systems and equipment proposed in Category XI(a)(3) appear to include systems that have historically been found on the CCL. For example, controls on Synthetic Aperture Radar (SAR) and Inverse Synthetic Aperture Radar (ISAR) have been found on the CCL since at least 1996[3]. The phrase "radar that sends and receives communications" could conceivably encompass ALL radar systems that transmit and receive data including those controlled by ECCN 6A008 which does not seem consistent with the stated intent of the export control reform initiative to prevent movement of CCL controlled items to the USML.

Category XI(a)(4)(i) Electronic support systems and equipment appears to control detection and interception systems and equipment that have historically been found on the CCL. For example, ECCN 5A001.i controls systems or equipment, specially designed or modified to intercept and process the air interface of 'mobile telecommunications', and specially designed components. Similarly, controls on

[1] 15 CFR 774, Supplement No. 1
[2] 75 FR 76935 (December 10, 2010)
[3] See 6A008.d

systems and equipment primarily useful for the surreptitious interception of wire, oral, or electronic communications are currently found on the CCL in ECCN 5A980. An emerging technology that would be affected by inclusion of these systems and equipment on the munitions list includes commercial cognitive radios having the features specified in Category XI(a)(4)(i) that control E911 emergency caller location systems that need to be able to geolocate cellular signals. Furthermore, there is an emerging technology area to provide location specific services that may also rely on geolocation of wireless devices. Finally, the emerging area of cognitive radio, especially for spectrum sharing technologies[4], may need to rely on signal detection and classification techniques, especially to determine the existence of military radar signals, so that commercial wireless systems can recognize their existence and give priority access to the military. Unless clarified, this category may unintentionally subject a number of existing or emerging commercial wireless technologies to control under the ITAR.

As proposed, the descriptive characteristics of Category XI(a)(4)(iii) appear to result in the inclusion of commercial items currently subject to 5A001.f "Jamming equipment specially designed or modified to intentionally and selectively interfere with, deny, inhibit, degrade or seduce mobile telecommunication services and perform any of the following, and specially designed components therefor." Long Term Evolution (LTE), marketed as 4G LTE advanced communications, which is a standard for wireless communication of high-speed data for mobile phones and data terminals is currently very susceptible to jamming.[5] Fixing this vulnerability may require systems and equipment with capabilities enumerated in Category XI(a)(4)(iii). The proposed rule needs to be modified to ensure that these features used in commercial 4G cellular LTE systems and equipment are not considered "electronic combat equipment."

The areas of overlap identified between Category XI(a) and various ECCNs raise the question of under what circumstances items having similar or the same characteristics as those enumerated in (a)(4)(i) will be considered defense articles, and when they are considered subject to the EAR. Are the items under these ECCNs excluded from the USML if they are not used in "electronic combat equipment"? Or do they now become controlled under (a)(4)(i) because they have the "positive" characteristics enumerated for "electronic support (ES) systems) and equipment"?

It is unclear what is meant by the terms "test set" as used in proposed Category XI(a)(11). AUECO recommends that that additional description be provided to clearly specify what this paragraph is intended to control.

Category XI(b) Electronic systems or equipment "specially designed" for the collection, surveillance, monitoring, or exploitation of the electromagnetic spectrum (regardless of transmission medium), for intelligence or security purposes or for counteracting such activities. This includes:

The revisions to Category XI(b)(1), like those proposed in (a)(4)(i), appear to result in the control of collection, surveillance, and monitoring systems or equipment found on the CCL in ECCN 5A001.i, as well as systems and equipment primarily useful for the surreptitious interception of wire, oral, or electronic communications enumerated in ECCN 5A980. These ECCNs control existing law enforcement and emergency responder systems but those systems may be inadvertently included in Category XI, if the proposed revisions are adopted. Both E911 emergency response systems and security methods used by corporations to determine hacking into a network use the techniques identified in Category XI(b)(1).

[4] FCC Notice of Proposed Rule Making http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-148A1.doc
[5] See http://www.technologyreview.com/news/507381/one-simple-trick-could-disable-a-citys-4g-phone-network/

Category XI(c) Parts, components, accessories, and associated equipment, as follows

Category XI(c)(9)(i) also appears to overlap existing commercial items. For example, 4G LTE (discussed above) uses electronically steer angular beams and nulls that, based on the limited descriptors provided, would potentially fit the control criteria of Category XI(c)(9)(i).

Category XI(c)(9)(ii) is intended to control antennas and "specially designed" parts and components that form adaptive null attenuation greater than 35 dB with a convergence time of less than 1 second. While AUECO appreciates this use of performance parameters to define the scope of the subparagraph, the specific standards would appear to include those common to antennae that may be used in LTE commercial satellite communications.

The term "multiple or more" in the proposed wording of Category XI(c)(10)(ii) seems unnecessarily redundant.

General Comments

Many of the entries in Category XI appear to rely heavily on the category descriptor of "military" electronics to determine what items are included in the Category. Without additional clarification about what specific technical parameters or performance features make the enumerated items "military" the proposed revision does not appear to improve upon the current regulations in which items are controlled if they were "designed, developed… for a military application[6]." For example, Category XI(c)(16) could easily be interpreted to include parts that are common to commercial security systems without a clearly established definition of what constitutes "military" electronics. This is particularly problematic since many developments in electronics result from fundamental research or as a result of commercial development for the civilian market and are later adopted by the military; it is not clear from the proposed rule whether or not these items become "military" electronics simply due to their adoption by the military.

Each area of overlap identified above, and others we may have failed to identify, will create significant uncertainty for exporters in determining the regulatory jurisdiction of their items. This uncertainty could lead to an increase in the number of commodity jurisdiction requests and inadvertent violations. AUECO suggests additional technical review and discussion be conducted to ensure all such potential overlaps are identified and that appropriate clarifying language is added, e.g. inclusion of more technical parameters and/or use of notes like the one to Category XI(a)(1)(iii) which excludes items subject to 5A001.b.1, before a final rule is issued for Category XI.

<u>Unambiguous Descriptions - Absence of Performance Parameters</u>

In addition to providing a jurisdictional bright line between the USML and CCL, the export control reform initiative aims to "Describ[e] items using objective criteria, such as qualities to be measured (e.g., accuracy, speed, and wavelength), units of measure (e.g., hertz, horsepower, and microns), or other precise descriptions, rather than broad, open-ended, subjective, catch-all, or design intent-based criteria[7]." The use of such parameters is critical to creating a positive list that exporters can use to confidently determine the categorization of their items on the USML and the CCL. AUECO is of the

[6] 22 CFR 120.3 Policy on designating and determining defense articles and services.
[7] See http://export.gov/ecr/eg_main_027617.asp.

opinion that while adequate technical parameters are provided for some subparagraphs in the proposed revisions to Category XI, they are significantly lacking in others. The following subparagraphs are examples where the inclusion of technical specifications or performance parameters would improve the clarity of the description of controlled items and facilitate self-classifications by exporters:

Category XI(a)(1)(ii) identifies "Underwater single acoustic sensor systems that distinguish tonals and locates the origin of the sound" without providing technical parameters to establish a reasonable threshold to warrant their inclusion on the USML. AUECO suggests that if there are no clear technical parameters or performance thresholds that differentiate between systems intended to be included on the USML versus the CCL, perhaps it is the unique characteristics of military "tonals" that should be subject to control rather than the sensing technology.

The proposed controls on radar systems and equipment in Category XI(a)(3) lack key definitions that are necessary for interpretation and application. It is noteworthy that the term "target" is used throughout subparagraph (3) as a trigger for ITAR jurisdiction (for example, (i) airborne radar that track targets and (xxi) radar employing non-cooperative target recognition). However, without the ability to understand what a "target" is, these proposed controls are vague and could sweep in a wide range of radar systems that are not appropriate for USML control. It may be helpful to understand that the term "target" is used in essentially all contexts when discussing how radar systems send and receive signals to identify an unknown item or feature (i.e. a "target"). The term "target" in these contexts can be used to describe a wide variety of items, none of which are military specific. In order to avoid an overly broad jurisdictional trigger, AUECO strongly recommends that DDTC define the term "target," or alternatively to explain in the notes to paragraph (a)(3) that non-military targets such as weather events, wildlife, environmental items are not included in that term.

Category XI(a)(4) simply states "Electronic combat equipment." AUECO is not clear what specific features or performance parameters make the enumerated items "combat" equipment when, as we pointed out in the preceding section there appears to be overlap with commodities currently on the CCL. For example, neither subparagraph (i) nor (iii) include language which differentiates between military and non-military systems and equipment. In contrast, subparagraph (ii) contains delimiters that are more clearly related to "combat," as that term is commonly used. Absent clarification from DDTC "electronic combat equipment" seems far too open to differences in interpretation and application.

<u>Fundamental Research Concerns – Commodity Jurisdiction Cycles, Proof-of Concept Activity and Other University Specific Issues</u>

Category XI(a)(7) subjects all electronic devices, systems or equipment funded by the Department of Defense (DoD) to control as defense articles unless they have been declared subject to the EAR via a formal commodity jurisdiction or identified in the relevant contract as being developed for both civil and military applications, when such items are not defense articles enumerated on the USML. Much academic research funded by the DoD is in newly emerging technologies that appear on neither the USML nor the CCL, and the proposed wording would most likely necessitate frequent commodity jurisdiction requests from the academic community.

The requirement of a formal commodity jurisdiction as a prerequisite for EAR applicability unless there has been a formal contractual determination of both military and civilian applications appears to limit an

exporter's ability to self-classify an item, which is recognized by the Department of Commerce as an important and viable avenue for determining regulatory jurisdiction, so much so that guidance for making a self-classification has been placed online[8]. Additionally, the limited options set forth by this proposed rule (either the contract states that civil and military applications are involved, or a CJ must be submitted, otherwise DoD funding in and of itself triggers the ITAR) may be an obstacle to contracting, as DoD contracts are generally of relatively short duration (1 year cycles) and the time to obtain a commodity jurisdiction ruling is on the order of two months. This would be particularly limiting for academic institutions where research activities are generally performed in open environments which may include high levels of foreign national participation.

We are particularly concerned that Category XI(a)(7) will negatively impact the ability of U.S. academic institutions to conduct "fundamental research[9]" funded by the DoD. There has long been recognition that basic and applied research in science and engineering at universities is critical to both U.S. national security and to securing economic competitiveness. In recognition of this role, both the ITAR and the EAR have carve-outs to permit free sharing of information resulting from such "fundamental research," 22 CFR §120.11(a)(8), or "fundamental university based research," 15 C.F.R. §734.8(b). Both of these carve-outs include limitations that fundamental research would not apply if the university were to accept restrictions on the publication of the research results or on who might participate in the research activities. Generally, academic research administrators and export compliance staff review a DoD award for the presence of such restrictions as the first consideration of whether fundamental research might apply. It is unclear how the application of fundamental research fits into the proposed rule; is the academic community to first make the fundamental research determination, and apply Category XI(a)(7) only if fundamental research does not apply, or is the assumption that DoD funded awards will not be eligible for fundamental research? In an environment where DoD funded research may entail early proof of concept activities, there may be no proposed applications, either civilian or military, as commonly occurs in early phase funding to universities. The current wording of Category XI(a)(7) does not make allowance for DoD-funded developmental, proof of concept research activities.

Finally, without information as to how DoD will make the commercial and military application determinations, it is difficult to fully assess the impact of the proposed rule on university research. Will contracting officers make such determinations, will DoD have a technical advisory group that makes such determinations, or is some other system contemplated? AUECO requests that the Department of State assure that reasonable procedures are in place before transferring jurisdictional responsibility to DoD.

An Imprecise Definition of "Equipment"

Precise definitions and consistent use of defined terms are essential to the development of clear regulations and enable exporters to confidently interpret and apply the regulations to their own activities. While the proposed definition of "Equipment" appears relatively straightforward on its own, it becomes less so when considered in the context of the other terms defined in §121.8. There does not appear to be a clear distinction between "Equipment" and "Component." Also, will "Equipment" be added to the lists of constituents that may comprise an "End Item" or "System"? It also seems possible, based on the existing and proposed definitions, for an item to be both "Equipment" and an "End Item."

[8] See http://beta-www.bis.doc.gov/index.php/licensing/commerce-control-list-classification
[9] National Security Decision Directive 189

AUECO suggests that the Department consider all of the terms defined in §121.8 as a unit and prevent overlap, or to the extent that overlap is intended or unavoidable to acknowledge it within the definitions.

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 public comment. AUECO is concerned that without final definitions of terms such as: public domain/publicly available, fundamental research, and technology/technical data we cannot appropriately analyze the proposed rules under consideration as part of the export reform initiative. These are critical to the interpretation and implementation of the proposed rewrites of the USML categories and to our assessment of their impact on university research and educational activities.

AUECO recommends that the proposed harmonized definitions be released prior the proposed revisions of additional USML categories. We would further ask that the export community be provided the opportunity to comment not only on the proposed definitions once released, but also on previously closed proposed regulatory changes when the proposed definition may impact the interpretation and/or implementation of the rule, whether proposed or final.

In Conclusion

AUECO fully supports the Department's efforts to convert the USML into a "positive list", and hopes that this step will reduce jurisdictional disputes and uncertainty. We encourage the Department to revisit the proposed rules amending the ITAR as a single regulation prior to implementation of any changes. It is important that the proposed definitions and revised USML categories work in concert to protect U.S. national security without unnecessarily impeding fundamental research activities critical to maintaining the U.S. defense industrial base. AUECO thanks the Department for the opportunity to comment on the proposed changes to Category XI and the definition of "Equipment".

Sincerely,

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Office of Defense Trade Controls Policy
U.S. Department of State
Washington, DC

January 28, 2013

Re: RIN 1400-AD25

Dear Sir or Madam:

On November 28, 2012, the Bureau of Political-Military Affairs published a Proposed Rule entitled "Amendment to the International Traffic in Arms Regulations: Revision of the U.S. Munitions List Category XI and Definition for "Equipment" ", which item appeared at 77 FR 70958.

Agilent Technologies appreciates the opportunity to comment on this proposed rule; as a major manufacture of electronic test and measurement equipment, we would potentially be impacted by several of the proposed changes.

Entry XI(c)(7): Digital radio frequency memory (DRFM) with RF instantaneous input bandwidth greater than 400 MHz, and 4 bit or higher resolution and ''specially designed'' parts and components therefor;

Agilent understands that many DRFM are essential to various electronic warfare applications, and concurs that a DRFM entry is appropriate within a USML positive list. Additionally, Agilent believes that the proposed language is clear and would be easily understood by manufacturers and exporters. However, Agilent is concerned that the proposed language is too encompassing and would unnecessarily and inappropriately capture DRFM that are designed for commercial/civil use in the testing of broadband communications signals. We believe that latency between the input and output stages of a DRFM may be a

pertinent control parameter; we suggest that consideration be given to modified language as follows:

> XI(c)(7) Digital radio frequency memory (DRFM) with RF instantaneous input bandwidth greater than 400 MHz~~, and~~ 4 bit or higher resolution **and latency less than 200 us**, and ''specially designed'' parts and components therefor;

Entry XI(c)(13): Tuners having an instantaneous bandwidth of 30 MHz or greater and a tuning speed of 300 microseconds or less to within 10 kHz of desired frequency;

Again, Agilent understands that fast tuners are essential to various electronic warfare applications, and concurs that a tuners entry is appropriate within a USML positive list. And again, Agilent believes that the proposed language is clear and would be easily understood by manufacturers and exporters. However, again, Agilent is concerned that the proposed language is too encompassing and would unnecessarily and inappropriately capture tuners that are designed for commercial/civil use in the manufacturing (acceptance testing) of components and devices for wireless communications.

Test time is the single biggest factor that handset power amplifier manufacturers consider when buying test equipment for production test, and tuning speed of the test equipment is the single most important factor that affects overall test time. To reduce cost and increase volume throughput, manufactures apply great pressure on vendors of test and measurement equipment to drive down test times; accordingly, vendors of test and measurement are developing test equipment that has faster tuning speeds. Additionally, the number of frequency bands in which wireless equipment operates is increasing along with bandwidth. The current generation of WLAN (802.11n) has 40 MHz bandwidth, which exceeds the proposed XI(c)(13) control threshold of 30 MHz. The next generation (802.11ac) will have 160 MHz bandwidth. The latest generation of cellular radio technology (LTE) has fundamental 20 MHz bandwidth channels, but can aggregate them up to 100 MHz, thereby often requiring the test equipment to have 100 MHz measurement bandwidth.

To separate tuners of military significance from those used for manufacturing testing, Agilent proposes that "instantaneous bandwidth" be replaced with "instantaneous gap-free demodulation bandwidth, as follows:

Agilent Technologies

> XI(c)(13) Tuners having an instantaneous **gap-free demodulation** bandwidth of 30 MHz or greater and a tuning speed of 300 microseconds or less to within 10 kHz of desired frequency;

Gap-free demodulation capability is not essential for wireless device production testing.

Treatment of Test, Inspection and Production Equipment for Military Electronics.

Finally, Agilent fully supports the proposal (as implied in the present Proposed Rule and elaborated in the companion BIS rule RIN 0694-AF64, which appeared at 77 FR 70745) to transfer to the CCL under ECCN 3B611 all of that "Test, Inspection and Production Equipment for Military Electronics" which is not explicitly enumerated in the revised USML Category XI. We believe that this recognizes and implements a useful differentiation between test equipment, which has only ancillary military function, and operational equipment, which we agree belongs on the USML.

If you wish any clarification or would like to discuss any of the above comments, please contact me at jonathan_wise@agilent.com or 719-531-4799.

Sincerely yours,

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January 30, 2013

Subject: **Comments on Amendment to the International Traffic in Arms Regulations (ITAR): Revisions of US Munitions List (USML) Category CI and Definition of "Equipment"**

Reference: RIN 1400-AD25

Dear Ms. Goforth:

The General Electric Company, acting through its GE Aviation business unit (GEA), submits the following comments for the referenced proposed rule. GEA appreciates Administration's effort to address this issue.

SUMMARY COMMENTS:

GEA commends the Administration's efforts on export control reform. GEA concurs that military electronic computers should not be subject to United States Munitions List (USML) and thus their jurisdictional status should be change so that they are subject to the Export Administration Regulations (EAR). This change would create a reduction of over 100 licenses in GEA's current ITAR inventory. This rewrite also eliminates the Significant Military Equipment (SME) designation for very sensitive military electronics. While this will simplify the exports of these items, GEA urges the Department of State to reconsider SME designations in other categories. In the context of having no equipment designated as SME in Category XI, GEA questions the rationale for designating certain items as SME in Category XIX.

SPECIFIC COMMENTS

UMSL Category XI(a)

1. GEA recommends the modification of paragraph (a)(7) to replace the term "funded" with "property rights owned". If DDTC's intent is to capture items inherently military due to the fact that were developed by US Department of Defense (DoD), then it needs to shift its focus to items developed using DoD-owned intellectual property. Some items funded by DoD are not solely intended for a military application, thus this paragraph may capture items that are dual-use in nature.

2. GEA recommends the inclusion of a sub-paragraph to proposed USML XI(a) in order to ensure store management systems not capable of firing weapons (e.g. ammo counting) are controlled under the USML.

UMSL Category XI(b)

1. In its proposed rule rationale, the Directorate of Defense Trade Controls (DDTC) delineates how paragraph XI(b) is being modified to provide consistency with Wassenaar Munitions List (WAML)[1]. However, upon review of WAML, GEA notices DDTC added controls to this entry (i.e., collection, exploitation) which makes proposed USML XI(b) more expansive than WAML ML11. In order to ensure true alignment with WAML, GEA recommends replacing proposed XI(b) with the text from ML11, while retaining subparagraphs (1)-(4) as examples of items subject to this control.

2. GEA recommends the addition of a subparagraph (5) to proposed XI(b) to cover all other items meeting the control of the paragraph, but not listed under subparagraphs (1)-(4). This subparagraph such read as follows: *"(5) other".* This additional subparagraph would greatly assist exporters in their classification processes. If such items are designated solely as XI(b), exporters may question in their classification tracking systems whether the numerical paragraph was inadvertently omitted.

UMSL Category XI(c)

1. GEA recommends the modification of subparagraph (c)(2) to read as follows: "printed circuit boards or patterned multichip modules **specially designed" for military electronics in this subchapter.** This change would reduce confusion around what is the defense article that triggers the ITAR-control under this subparagraph.

UMSL Category XI(d)

1. GEA notices the use of the term "directly related" as the identifier for technical data subject to the control USML Cat. XI. However, "directly related" is not a defined term. In order to ensure definitional consistency and avoid confusion on what is subject to this control and what is not, GEA recommends the use of the term "specially designed" instead.

[1] *See* WAML ML11 Note, paragraph c.

22 CFR 121.8:

1. GEA appreciates the inclusion of a definition for the term "equipment" and urges DDTC to do the same for "tooling". GEA proposes "tooling" to be defined as "*aids, instruments, or devices such as cutting tools, dies, fixtures, gauges, jigs, and molds used in the production, manufacture, assembly, repair, testing, maintenance, or modification of an end-item, component, accessory, part, system, or equipment*".

Miscellaneous

1. GEA recommends the inclusion of language that clarifies that controls under this USML category are based on the capability of the item at the time of export and not to any the potential capability (e.g. dormant capability of the item).

We appreciate the opportunity to provide comments on this Proposed Rule. If you have any questions or require additional information concerning this submission, please contact the undersigned at (202) 637-4206 or by email at: kathleen.palma@ge.com or Laura J. Molinari at (202) 637-4401 or by email at: laura.molinari@ge.com

Sincerely,

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January 28, 2013
13-C-RRB-002

Candace Goforth, Director
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Bureau of Political-Military Affairs
U.S. Department of State
2401 E Street N.W.
Washington, D.C.

Subject: RIN 1400-AD25 (77 FR 70958) Amendment to USML Category XI

Dear Ms.Goforth:

Esterline Technologies Corporation supports the goals and objectives of the Export Control Reform (ECR) Initiative, and submits the following recommendations to simplify and make the reforms more efficient. Esterline is a manufacturer of a wide variety of parts and components for the aerospace and defense sector. We appreciate the opportunity to comment on the U.S. Department of State's proposed amendment for USML Category XI.

Summary of Comments and Recommendations

This section outlines our main comments, each of which is explained more fully in the remainder of this letter. As noted in the BIS companion proposed rule RIN 0694-AF64 (77 FR 70945), electronics are particularly susceptible to ambiguous classification. Esterline appreciates the difficulty faced by DDTC and BIS in resolving this ambiguity, and offers the following suggestions to assist in achieving Objective 1 of the ECR, to preclude multiple or overlapping controls of similar items within and across the two control lists.

1. Define an order of precedence where multiple USML categories and/or CCL ECCNs may apply to the same item.
2. Remove parts and minor components in normal commercial use to which minor modifications have been made from all "catch-all" controls remaining on the USML. A definition for minor modifications is suggested.
3. Respect jurisdiction of items for which a formal commodity jurisdiction ruling has been obtained.
4. Correct unintended effect of controls on printed circuit boards.

5. Clarify controls resulting from DoD funding of developmental items.
6. Clarify the catch-alls for classified items throughout the USML.
7. Improve definition of "equipment."
8. Address commercial items subsequently used in TEMPEST systems

1. Define Order of Precedence

Defining a clear order of precedence that is easy to locate, and in table form, would improve the consistent understanding of correct export control classification by policy analysts, licensing officers, enforcement officers, customs officers, and industry.

Electronics are found in end items or enumerated systems and components in nearly all of the USML Categories (see Table I of this letter). In many cases the same item may be reasonably classified under any of multiple categories, because either:

a. The item's application pertains to multiple categories in the USML;

b. The item has several integrated functions separately enumerated on the USML; or

c. The item is common to higher assemblies in more than one USML category.

This ambiguity currently exists in the ITAR, but in most cases the various USML categories would result in no difference in licensing policy. An exception remains for electronics that may be SME; however, at present SME constitutes a small subset of all electronics controlled under the ITAR.

Under proposed rules, a specially designed item with several potential categories could be subject to multiple possible licensing policies depending on the classification decision: ITAR USML Significant Military Equipment (SME), ITAR USML non-SME, EAR CCL 600-series NS1 control, or EAR CCL 600-series AT1 control.

For example, a single control panel in the combat information center of a naval vessel might incorporate switches that engage or disengage a fire control computer, power a missile launcher, arm and launch the missile, and place a radar system in active or standby mode. Under existing regulations, the control panel could be reasonable classified under USML IV(h), VI(f), XI(c), or XII(e), all of which have the same licensing policy. Under proposed rules published to date, the control panel could be reasonably classified under USML IV(h), ECCN 8A609.x, USML XI(c), ECCN 3A611.x, or USML XII(e), with up to two different licensing policies. A specially designed indicator light on the control panel might therefore be reasonably classified under USML IV(h), ECCN 8A609.y.10, ECCN 3A611.x, or USML XII(e), now up to three different licensing policies.

In most case, order of precedence has not been documented. In a few circumstances, order of precedence has been established for certain subcategories within the USML or under interpretations to the USML. For example, under RIN 1400-AD25, USML Category XII takes precedence over USML Category XI(a). These do not cover all situations, and are not consistently documented or easy to locate.

Table I

USML Cat.	ECR Rule		Possible Categories for Electronics (* indicates SME)	Parts Catch-All
	RIN	Fed. Reg.		
I	1400-AC90	Unpublished	I(h)	Unknown
II	1400-AD05	Unpublished	II(g), II(h), II(j)	Unknown
III	1400-AD04	Unpublished	III(d)	Unknown
IV	1400-AD19	Unpublished	IV(c), IV(h)	Unknown
V	1400-AD02	77 FR 25944	N/A	N/A
VI	1400–AC99	76 FR 80302	VI(c), VI(f)	No
VII	1400–AC77	76 FR 76100	VII(g)	No
VIII	1400–AC96	76 FR 68694	VIII(f), VIII(h)	Partial
IX	1400–AD15	77 FR 35317	IX(a), IX(b)	No
X	1400–AD16	77 FR 33698	X(d)(3)	No
XI	1400-AD25	77 FR 70958	XI(a), XI(b), XI(c)	No
XII	1400-AD32	Unpublished	XII(*a), XII(*b), XII(*c),XII(*d), XII(e)	Unknown
XIII	1400–AD13	77 FR 29575	XIII(b), XIII(j)(3), XIII(k)	No
XIV	1400-AD03	Unpublished	XIV(*f), XIV(k), XIV(l)	Unknown
XV	1400-AD33	Unpublished	XV(d), XV(e)	Unknown
XVI	1400-AD18	Unpublished	XVI(*a), XVI(*b), XVI(*c), XVI(d)	Unknown
XVII	1400-AD34	Unpublished	XVII(*a)	Unknown
XVIII	1400-AD35	Unpublished	XVIII(*a), XVIII(*b), XVIII(c), XVIII(d), XVIII(e)	Unknown
XIX	1400–AC98	76 FR 76097	XIX(e), XIX(f)	Partial
XX	1400–AD01	76 FR 80305	XX(c)	Yes

Note: where ECR rule is unpublished, possible categories that could cover electronics parts and components are shown from current USML. All of these categories currently contain a catch-all, but it remains unknown whether a catch-all will be included after the ECR rule is published.

2. Parts and Minor Components in Normal Commercial Use

The USML categories inconsistently define "catch-all" controls for parts and components (including accessories and attachments), as shown in Table I of this letter. The USML Categories not yet published for revision under the ECR retain for now the existing complete catch-all on specially designed parts and components. Under ECR as proposed, complete catch-all controls will continue for USML Category XX, and under Categories VIII and XIX continue for certain final aircraft or engine installations.

As a result, basic, simple, common hardware in normal commercial use (whether electronic, electrical, mechanical, hydraulic, or pneumatic) with minor off-catalog modifications or adaptations will be subject to widely varying controls. Thus, a common industrial electrical connector with modified solder terminals or a resistor with wires soldered to the leads could be controlled under any of the following licensing policies:

- ITAR USML Significant Military Equipment (SME),
- ITAR USML non-SME,
- EAR CCL 600-series NS1 control,
- EAR CCL 600-series AT1 control,
- EAR CCL other series control (various policies), or
- EAR99.

Thus, for items meeting the "specially designed" test of the ITAR and EAR, the licensing policy would vary widely depending on the assembly in which it is installed. The use of variable catch-all controls across the ITAR and CCL and multiple, inconsistent ".y" lists in the CCL is confusing and ambiguous.

Naturally, any ambiguity over the classification of the item in which a part is installed complicates this problem even further.

Compounding the problem for basic hardware manufacturers is the number of supply chain tiers between the hardware manufacturer and the manufacturer of the end item. The hardware manufacturer may know the item is eventually installed in a military fighter aircraft, but may not know installation details (aircraft, engine, or avionics) which could alter the export control classification under the proposed rules. Significant differences in export control policy will result from information not available to the hardware manufacturer.

Common industrial electronic, electrical, mechanical, hydraulic, or pneumatic hardware with minor modifications or adaptations do not warrant control under the ITAR and should be consistently transferred to the EAR. A list of basic hardware is proposed on Table II of this letter.

One of the most common minor adaptations to electronic and electrical parts is to solder a simple short interconnection of wire or of polyimide-insulated flexible circuit to its

terminals, usually of length 30 cm or less, with or without an electrical connector. Other common adaptations include substituting termination styles or pre-forming the part or component leads for a particular installation, affixing the part or component to a mount or a heat sink, or making small changes to flanges, mounting holes, shafts, or installation fasteners.

Today this needlessly results in ITAR control for items that are otherwise commercial components having ECCN EAR99. Under the proposed rule, a wide range of control policies could result. These kinds of minor adaptation should not result in either USML or CCL 600-series ECCN control.

A standard model manually-operated rotary switch, for example, should be consistently treated under the same export category, no matter what end item it was installed in, with or without a panel washer, whether or not it had a pigtail wire termination soldered to its leads, whether it had two contact decks or four, whether or not the terminals were sealed from solder flux, regardless of the angle of throw, regardless of shaft length, and no matter that certain switch positions were spring-loaded or locking. These types of adaptation are usual and customary for panel-mounted electronic parts, but cannot always be anticipated by catalog options.

Modifications and adaptations to basic hardware should be considered minor (and therefore not specially designed) if they:

a. are unclassified;

b. are not for the purpose of improving the hardware item's resistance or hardness to nuclear radiation, nuclear electromagnetic pulse, or resistance to chemicals or biological agents controlled under the ITAR; and

c. are not made to achieve special, designated military properties (e.g., special low-observable, acoustic, or electromagnetic properties, hot section technology for military gas turbine engines).

A consistent control policy for basic, simple, common hardware in normal commercial use would reduce the regulatory burden on the small and medium companies that manufacture these items. The suggested approach also supports national security concerns because, to be excluded from ITAR control, (a) the unmodified item must be basic, simple hardware as listed on Table II of this letter and in normal commercial use, and (b) modifications and adaptations resulting in sensitive military technology are excluded.

Table II. Basic Hardware

Electrical and Electronic
Batteries
Capacitors
Display elements: cathode ray tubes, electroluminescent panels, liquid crystal

panels, segmented or graphic light-emitting diode arrays
Circuit protection devices: electric fuses other than those specially designed for explosive detonation, circuit breakers, gas discharge tube arrestors, ground fault circuit interrupters, metal-oxide varistors, thermal cutoffs, transient-voltage suppressor diodes
Crystal units and microelectronic oscillators
Discrete semiconductor devices
Electric filters, baluns, and ferrites
Electric switches other than RF, diplexer, duplexer, or circulator switches
Electric transformers, inductors, and coils
Electrical connectors, sockets, crimps, and couplings and their associated hardware: terminals, contacts, guide pins, covers, strain reliefs, and backshells
Filtered and unfiltered panel knobs, indicators, switches, thumbwheels, buttons, dials, lamps, and multi-character readout displays
Fixed resistors and variable resistors, potentiometers, and rheostats
Fluorescent lamps inverters and ballasts
Heater elements
Jumpers and grounding straps
Meters, gauges, and indicator dials
Microcircuits, unless programmed using ITAR-controlled technical data or CCL 600-series controlled technology, or application-specific using ITAR-controlled technical data or CCL 600-series controlled technology
Lamps and lamp holders
Photovoltaic cells
Relays, contactors, and optoisolators
Solenoids
Speakers, buzzers, and microphones
Thermoelectric coolers
Touchpads and touchscreens
Vacuum tubes other than TWTs, klystron tubes, or tubes specially designed for articles enumerated in USML Category XII
Mechanical
Rings
Caps and plugs
Circuit board hardware: racks, card guides, handles, pullers, standoffs, spacers, and rails

Clamps and line blocks
Electronic component insulators, mounts, holders, clips, and spacers
Fan hardware: grills, air filters, and finger barriers
Fasteners: screws, bolts, rivets, rods, studs, threaded inserts, washers, nuts, nut plates, pins, clips, retaining rings, thumbscrews, knobs, turnbuckles
Flip-guards
Gaskets and O-Rings
Grommets and grommet strips
Heat sinks electrical and electronic components
Latches and hinges
Magnets
Springs
Hydraulic, Pneumatic, Fuel & Lubrication
Gauges
Hoses, tubing, straight and unbent lines, and straight and unbent pipes
Fittings, couplings and clamps
Filters
Regulators
Switches
Valves

3. Respect for Prior Commodity Jurisdiction Rulings

Formal commodity jurisdiction determinations already made prior to the ECR initiative should be respected. The U.S. Government has already determined that these items do not warrant control under the ITAR. These items should not revert to the ITAR as a result of the ECR. An explicit statement to this effect is needed to prevent such inadvertent effects, improve the predictability of U.S. Government policy, prevent disruption of supply to the U.S. and allied armed forces, and prevent an increased commodity jurisdiction workload to the U.S. Government.

4. Controls on Printed Circuit Boards

The proposed treatment of specially designed printed circuit boards under USML Category XI(c)(2) would have unintended consequences. Most printed circuit boards in aerospace and defense applications would meet any reasonable test for "specially designed."

The proposed rule does not address any boundary between assemblies containing the printed circuit board and the ultimate end item. Commonly, printed circuit boards specially designed for an aircraft component are also unique to the aircraft itself.

By the see-through rule, any system, equipment or component that would be classified on the CCL 600-series ECCNs under the ECR initiative would likely revert to ITAR if it were used on a USML end item and contained a custom printed circuit board. This results in a hidden ITAR catch-all control for military electronics and other components that the ECR initiative intends to be controlled under the CCL 600-series ECCNs.

For example, the ECR proposes to place specially designed electronic release mechanisms under ECCN 9A610.h. Specially designed printed circuit boards would not be unusual in this kind of application. The proposed rule would cause the release mechanism to revert to ITAR simply for using printed wiring.

Recognizing that many printed circuit boards contain complex interconnections that could reveal important properties of the assembly in which they are used, it should be appropriate to classify printed wiring boards under the same category as the information they are presumed to contain, as if the printed circuit board were any other type of medium (such as a CD-ROM or a USB flash drive). Thus, a schematic diagram, interconnection net list, and printed circuit board all containing equivalent technical data would be controlled identically.

Absent controlled technical data in the printed circuit board, it would be controlled by any catch-all relevant to the immediate next assembly (for example, if the printed circuit board contained only a small number of circuit traces).

Using this principle, the printed circuit board would be ITAR-controlled if it were unique to an ITAR-controlled component or contained ITAR-controlled technical data, but EAR-controlled otherwise.

Variations in nomenclature such as printed wiring board, printed flexible wiring, and backplane should be considered in the rule, as there is some variation within industry as to meaning of the item name.

5. DoD Funding of Developmental Devices, Systems, and Equipment

The proposed language for developmental items under USML Category XI(a)(7) would control numerous items that are unrelated to war fighting. The DoD purchases everything from golf course equipment to officer club furnishings to electronic signs for post exchanges. Any of these could contain an item considered developmental.

The proposed language would also control variations of items to which the classification is otherwise not in doubt, resulting in ambiguity and confusion. When during its life cycle does the export category change? How does the supply chain find out? The facts of DoD funding or developmental phase should not be relevant to the export classification of a part. Its characteristics and properties should be relevant.

Under this proposed rule, a trackball developed under DoD funding begins its life under USML Category XI(a)(7). Then at some point, which may be unknown to the manufacturer and/or exporter, the trackball transitions to another category – possibly, but not exclusively, ECCN 3A611.y.21. How does this benefit the U.S. Government? How would enforcement agencies know what to do?

Manufacturers and exporters should not face this added burden of classifying items under one category while developmental and another category after development has completed.

The proposed USML Category XI(a)(7) should be deleted.

6. Catch-All Controls for Classified Items

Several of the proposed USML categories contain part and component for classified items. At the same time, existing USML category XVII is also a catch-all for classified items. Some clarity should be provided about order of precedence between the several classified catch-all controls, and also between these controls and specifically enumerated USML subcategories.

The clause "is being developed using classified information" is too vague, and the policy intent is unclear. Does it control items that are only indirectly derived from classified information? If so, most items now on the ITAR would remain controlled by ITAR, because there is likely to be some classified information somewhere with at least a tenuous relationship to the items.

Further, manufacturers and exporters of unclassified items are usually unaware of any classified information that could relate to their products. Items currently controlled under the EAR may revert to ITAR if this clause is retained in the final rule.

What is the policy implication for "being developed?" Does the item move from USML category XI(c)(17)(iii) to another category simply because development has completed?

Esterline suggests "is being developed using classified information" from any criteria for inclusion in the ITAR.

7. Improve Definition for Equipment

The proposed definition of "equipment" should clarify its relationship to "minor components" and "major components," or else should not be used. As given, it creates ambiguous treatment under § 121.8 and therefore the potential for ambiguous classification of items.

8. Commercial Items in TEMPEST Systems

Proposed USML category XI(a)(5)(iv) would control equipment certified to meet listed TEMPEST standards. This should be revised so that it would not control commercial off-the-shelf equipment never designed for TEMPEST, but subsequently tested, and found to comply with the requirements, and certified (particularly when the certification takes place without the knowledge of the equipment manufacturer).

Summary

Esterline believes that addressing order of precedence in classification, consistent treatment of basic hardware, respect for prior commodity jurisdiction rulings, and the other suggestions offered here would improve implementation of the ECR initiative. Please feel free to contact me if you have any questions concerning the recommendations outlined above.

Regards,

Richard R. Baldwin
Director, Ethics & Compliance
Esterline Technologies Corporation

The University of Oklahoma®

OFFICE OF LEGAL COUNSEL

January 28, 2013

Office of Defense Trade Controls Policy
U.S. Department of State

RE: RIN 1400-AD25

To Whom It May Concern,

The University of Oklahoma (OU) is providing the following suggestions in support of the President's Export Control Reform effort, and appreciates the Department of State's request for comments. As a university, our mission is to provide the best possible educational experience for our students through excellence in teaching, research and creative activity, and service to the state and society. A common focal point of OU research involves meteorological and weather radar systems, and as a result we noted with interest the proposed revisions to Category XI (Military Electronics) of the United States Munitions List (USML). We hope the following comments are helpful.

Concerns with the Term "Target"

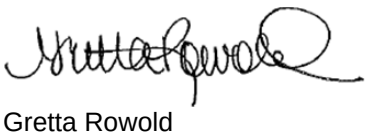
Throughout Category XI(a)(3) the term "target" is included as a qualifier for certain radar systems. It is important to understand that "target" is a term commonly used in radar contexts to describe whatever item the radar is imaging. Thus, the word "target" can indicate wildlife such as birds or weather events, hailstones, and rain. OU strongly recommends that DDTC either define the term "target" to specifically indicate those military target types that are intended to be captured, or provide a clarifying note explaining that the term "target" does not capture non-military targets such as wildlife, weather events, civilian aircraft, automobile traffic, etc.

Category XI Revisions that Capture EAR-Controlled Items

It appears that several proposed entries in Category XI(a)(3) either already exist on the Commerce Control List (CCL), or appear to overlap with the CCL. These proposed entries are identified in the attached document, which also notes "normal commercial use" for radar systems. OU strongly recommends that any items that have historically been subject to regulation on the CCL not be transferred to the USML, and respectfully suggests that any radar with "normal commercial use" is not appropriate for control on the USML.

In closing, OU hopes that these comments will help reduce jurisdictional uncertainty and prevent any inadvertent sweeping of dual use items onto the USML.

Kindest Regards,



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Attachment

Proposed ITAR provision	Current EAR provision	Note
XI(a)(3)(ii) synthetic aperture radar (SAR)	6A008 [Radar systems] (d) Capable of operating in synthetic aperture radar (SAR) mode	It appears that 6A008 has been in existence and has controlled SAR since at least 1996[1]. As a result, it seems curious that this would now become ITAR controlled technology. Used currently in a wide variety of research and commercial contexts, including: agriculture[2], environmental monitoring[3], forestry[4] including mapping damage from forest fires[5], and tracking permafrost[6].
XI(a)(3)(iii) inverse synthetic aperture radar (ISAR)	6A008 [Radar systems] (d) Capable of operating in inverse synthetic aperture (ISAR) radar mode	See comment above.
XI(a)(3)(xii) Radar incorporating pulsed operation with electronic steering of transmit beam in elevation and azimuth	6A008 [Radar systems. . .having any of the following] (e) Incorporating electronically steerable array antennae	See comment above.
XI(a)(3)(xvii) Radar having. . . pulse Doppler filter provides a normalized clutter attenuation of greater than 50db		Currently has a 'normal commercial use' in weather radar available on the international and domestic markets.

[1] http://www.bis.doc.gov/federal_register/rules/1996/61fr12714.pdf
[2] http://www.intechopen.com/books/references/advances-in-geoscience-and-remote-sensing/application-of-multi-frequency-synthetic-aperture-radar-sar-in-crop-classification
[3] http://www.sandia.gov/RADAR/images/oilslick.jpg
[4] http://www.nrcan.gc.ca/earth-sciences/geography-boundary/remote-sensing/radar-remote/2122
[5] See int. j. remote sensing, 2002, vol. 23, no. 20, 4211–4234.
[6] http://folk.uio.no/kaeaeb/publications/strozzi.pdf

UNIVERSITY of VIRGINIA
Office of Export Controls

January 28, 2013

Office of Defense Trade Controls Policy
U.S. Department of State

RE: RIN 1400-AD25 (ITAR Amendment – Category XI and "Equipment")

To Whom It May Concern,

I am writing on the behalf of the University of Virginia (University or UVA) to provide comments on the proposed revisions to Category XI of the U.S. Munitions List (USML). The University supports the ongoing export control reform initiative and hopes that it will ultimately result in clear regulatory jurisdictions and positive lists of controlled items; such changes will facilitate compliance by the University and other exporters. However, we remain concerned that some proposed changes, particularly in emerging technology areas, will infringe upon our ability to conduct fundamental research on behalf of government sponsors. As a public university, UVA has a diverse faculty, staff and student population with significant number of foreign nationals. Bringing together the brightest minds available, regardless of nationality or citizenship, has long been a characteristic of university research and is in fact one of its greatest strengths; for this reason the University is particularly concerned about proposed regulatory changes that will prohibit or restrict participation by the foreign national members of our community.

We are concerned that Category XI(a)(7) will negatively impact the ability of U.S. academic institutions to conduct DoD-funded "fundamental research" (22 CFR §120.11(a)(8)) or "fundamental university based research" (15 C.F.R. §734.8(b)) the results of which have long been excluded from regulatory control under the ITAR and EAR, respectively. Historically, DoD funding alone has not been considered sufficient to imply military applicability such that control under the ITAR is warranted; for example DoD funding agencies routinely fund fundamental research activities that result in proof of concept or experimental devices or materials that have no known military application and were not designed for use with a specific military system. It is unclear how DoD-funded fundamental research fits into the current proposed rule. Is the academic community to assume that DoD-funding precludes application of the fundamental research exemptions or are we only to apply Category XI(a)(7) in those cases where the terms and conditions are inconsistent with fundamental research (i.e. contain restrictions on dissemination of research results, preclude foreign national participation, or when the

research is specifically for a listed defense article)? We are concerned that without clear language excluding fundamental research and early proof of concept activities and devices that DoD decision-makers will default to a conservative position which will lead to the designation, intentional or not, of such devices and information as defense articles subject to control under the ITAR.

In cases where the scope of work may not be "fundamental research," the requirement for a formal commodity jurisdiction as a prerequisite for EAR applicability in the absence of prior enumeration on the USML or a formal contractual "dual use" determination seems at odds with the intent of the export reform initiate to create jurisdictional "bright lines" and "positive lists" so that exporters can confidently self-classify their items. Without guidance from DoD regarding how it will make "dual use" designations, when in the award process that determination will occur, and whether or not such a review will be conducted for all DoD-funded activities, we are concerned that this requirement will result in universities having to submit commodity jurisdiction (CJ) requests to the Department prior to accepting DoD-funded research. This will be particularly problematic for universities, or individual researchers, that are unwilling or unable to accept funding that does not allow for the open performance (using the best qualified individual available regardless of nationality) and reporting of the research findings. The time required to apply for and receive the results of a CJ request could significantly delay the final award of funding, the commencement of the funded research, and ultimately the delivery of those results to the DoD sponsor. It is also not clear what process will be provided to allow universities and others to challenge contract determinations. Will universities and other entities funded by DoD be indefinitely bound by award terms or will a mechanism be provided to request a CJ from the Department if they disagree with the DoD's determination or believe in the future that reassessment is warranted?

The University is concerned that many of the subparagraphs to Category XI Military Electronics rely heavily on the "military" designation of the title and that no definitions, technical characteristics, or performance parameters are provided for most subparagraphs to clearly define what makes the subject electronics "military." Reliance on the term "military" in the absence of specific criteria, fails to improve upon the current regulatory situation which relies on the exporter knowing whether or not an item was designed, developed, modified or configured for a military use or purpose. In fact, some might argue that the "military" designation potentially catches even more items because it leaves open the possibility that adoption of a commercial item for use by the military could result in it being subsumed into Category XI Military Electronics. The use of the term "combat" in Category XI(a)(4) without definition or parameters creates similar uncertainty for exporters by leaving much up to the interpretation of individual licensing or enforcement officers which could lead to inconsistent application.

Finally, the proposed wording of Category XI(a)(7), and similar subparagraphs in other USML categories, coupled with the creation of the 0Y521 ECCNs on the Commerce Control List to serve as a highly regulated holding designation for emerging technologies, creates significant uncertainty for academic researchers regarding the export control status of information and devices generated in university labs with DoD funding. This is

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particularly problematic as academic researchers typically have foreign national lab members and, in some instances, foreign national collaborators or subcontractors associated with their research projects and programs. Regulatory uncertainty is likely to discourage some highly talented researchers, including some currently funded by DoD, from applying for future DoD funding opportunities for fear that they will have to exclude members of their research teams and may not be permitted to publish their research findings, which is critical to academic advancement and the recruitment of high caliber students and post-doctoral researchers.

In addition, the University is concerned by the trend, evidenced by this and the previously released proposed rules for USML categories, to apply ITAR controls to technology purely on the basis of funding criteria rather than performance thresholds or technical specifications. Specifically, without a clear definition of what constitutes "developmental" language like that found in Category XI(a)(7) could result in the inclusion of proof of concept and experimental devices that are not inherently military in this USML category. In contrast, the current wording of Category XI(a)(7) allows for this type of distinction by being limited to "electronic equipment specifically designed or modified for a military application or specifically designed or modified for use with a military system."

On behalf of the University of Virginia, thank you for the opportunity to comment on this proposed rule. If you have questions, please contact me at kjh@virginia.edu.

Sincerely,

Kelly Hochstetler, PhD
Director

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ITT EXELIS

January 28, 2013

To: DDTC Response Team

Subject: USML Category XI revision

Comments on Proposed Rule: ITAR 121.1 Category XI – Military Electronics; and 121.8 definition [RIN 1400-AD25]

Discussion of Category XI – Military Electronics

Recommended revision to USML Category XI(a) heading:

To better conform with the structure of 121.8 and provide alignment with the types of commodities subject to control within this heading, we recommend the revision of Category XI (a) as follows:

(a) Electronic equipment **and systems** not included in Category XII of the U.S. Munitions list, as follows:

Recommended revision to USML Category XI(a)(7) subheading:

The current wording of XI(a)(7) incorporates reference to "Developmental electronic *devices*, systems, or equipment…" [emphasis added]. Unlike "systems" and "equipment" d*evices* is not defined in ITAR 121.8. Incorporation of "devices" as a non-defined term introduces ambiguity as to what types of items are intended for inclusion under this subheading.

For example, does "devices" contemplate various components, accessories, or parts, or other items within a potential Department of Defense developmental program, some of which, while "specially designed" may more appropriately fall within the new Commerce Control List Category "3X600 series"? Or is the intent of the XI(a)(7) controls focused more on commodities at the level of more complex and specifically defined "systems" or "equipment"?

We recommend that the subheading be revised to omit the "devices" terminology. This revision would allow commodity jurisdiction determinations pertaining to components, accessories, attachments, and parts, especially those with close commercial equivalents or clearly enumerated or described within the revised EAR Commerce Control List Category "3X600 series", tobe self-determined if appropriate rather than be subject to the requirements set forth in Note 1 to this

paragraph (which requires a formal commodity jurisdiction review or designation in the relevant DOD contract to establish EAR jurisdiction before items can be considered be subject to the EAR).

The following revision is therefore suggested:

(a)(7) Developmental electronic systems or equipment funded by the Department of Defense;

Alternatively, if this recommendation is contrary to the intent of the revised rule, we suggest that the term *devices* be specifically defined in ITAR 121.8 or expressly incorporated into one of the existing definitions.

Recommended revision to ITAR 121.8(c):

Although ITAR 121.8(c), *Accessories* and *attachments*, is not specifically within the scope of the Proposed Rule, incorporation of the term "equipment" within the current definition of this term may present confusion in view of the addition of the definition of "*equipment*" in proposed ITAR 121.8(h). Therefore, alternate language is suggested to avoid confusion as follows, with possible alternatives bracketed:

(c) *Accessories* and *attachments* are associated [**elements / items / articles / devices**] for any component, end-item, or system…

Regards,

Ronald R. Roos
Deputy General Counsel and
Assistant Secretary,
International Trade and Compliance

RR/lp

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Trade Compliance Manager
Night Vision & Tactical Communications Systems

Thomas Rall
Associate General Counsel
Night Vision & Tactical Communications Systems

Karen Jones
Director, Trade Compliance
Electronic Systems